DRUG & COSMETIC INDUSTRY

Your future may be right on a lady's lips, if your lipstick is right for her lips. Good scents from Norda will help make it right, when a lady comes in to buy beauty.

Norda can help give your perfumed products the excitement of excellence. It is a Norda tradition. Research and development are making the notable Norda skills even more deserving of confidence in quality that long experience has earned for Norda.

Norda makes good scents

Norda®

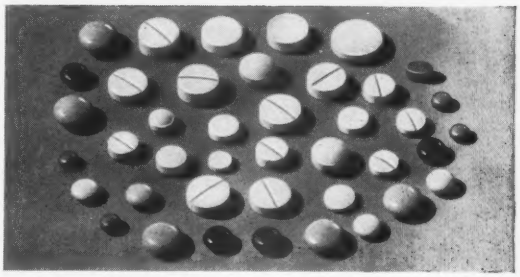
601 W. 26 St., New York 1, N. Y.

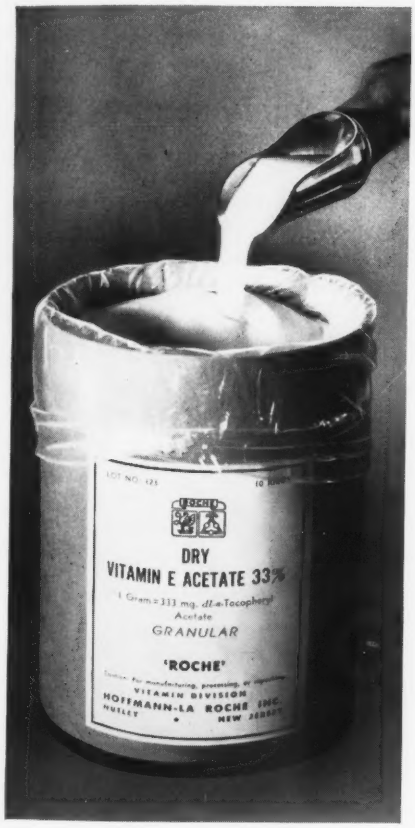
CHICAGO · LOS ANGELES · SAN FRANCISCO · TORONTO
MONTREAL · HAVANA · LONDON · PARIS · GRASSE · MEXICO CITY

NEW from

ROCHE®

DRY
WHITE
POTENT
POURABLE





CONVENIENT
COMPRESSIBLE
Vitamin E Acetate* 33%

Two Types—Granular—Fine Powder

***as dl-alpha-Tocopherol (yl) acetate (International Reference Standard)**

- *You get* vitamin E tablets that are snow white, small, highly potent (100 mg., even 200 mg.), reassuringly stable, and pharmaceutically elegant.
- *You make* high-potency *flat* tablets from Roche® Vitamin E Acetate 33% granular type *directly by compression*. You just add lubricant.
- *You use* dry Vitamin E Acetate 33% Roche®, fine powder type for tablets with *curved* faces (a granulation process is required). Also for multi-vitamin tablets, capsules, special granulations, and dry food stuffs.
- *You save labor*, cut handling time and costs.
- *You like* the idea? Get samples and technical bulletin from your Roche man, or write directly to the Vitamin Division, Hoffmann-La Roche Inc.

Rely, too, on Roche Process, Roche Progress for *liquid forms* of vitamin E — *Vitamin E Acetate Roche* [dl-alpha-Tocopherol (yl) Acetate]. 1 milligram equals 1 International Unit. This is the International Reference Standard for vitamin E. *Vitamin E Roche* [dl-alpha-Tocopherol (unesterified)]. 1 milligram equals 1.1 International Unit. The latter, as you know, has a highly useful antioxidant, as well as vitamin E value.

VITAMIN E COMES RIGHT FROM ROCHE

UNIVERSITY OF GEORGIA
ROCHE ROUND THE WORLD
MAR 23 '59
LIBRARIES

VITAMIN DIVISION • **HOFFMANN-LA ROCHE INC.** • NUTLEY 10, N. J.

Pacific Coast distributor: L. H. Butcher Company, San Francisco, Los Angeles, Seattle, Portland, Salt Lake City. *In Canada:* Hoffmann-La Roche Ltd., Montreal 9, P. Q.

Affiliated companies: Basle • Bogota • Buenos Aires • Grenzach • Havana Johannesburg • London • Madrid • Mexico City • Milan • Montevideo • Paris Rio de Janeiro • Stockholm • Sydney • Tokyo • Vienna • Agencies in other countries

Drug and Cosmetic Industry

Contents March 1959 Vol. 84 No. 3

Cover by Joel

Feature Articles

295 **Product Liability Without Fault**
by Everett I. Willis

298 **Modern Aspro-Nicholas Plants**
by Francis Chilson

300 **Anionic Surface Active Agents in Cosmetics**
by J. M. Longfellow

302 **Tailor-Made Steroids**
by Francis C. Brown

305 **The P.M.A. Looks at Government Medical Research**

306 **Perfume Formulation: the Violet Group**
by J. R. Elliott

308 **Nature's Gastro-Intestinal Antibiotics**
by Arthur H. Bryan and Charles A. Bryan

310 **The Mechanism of Smell**
by R. W. Moncrieff

Packaging and Selling Section

315 **Packaging to Please the Psyche**
by William Schlackman

319 **Packaging and Selling**
by Frazer V. Sinclair

325 **Packaging News**

327 **News and Views**
by Ted Klein

Departments

287 **Keeping Posted**
by Thomas R. Farrell

330 **Patent Thoughts and Trends**
by Thomas Cifelli, Jr.

335 **News**

347 **Management Forum**
by Francis Chilson

356 **Trade Literature**

368 **Industry's Books**
by Harry G. Kelbly

394 **Coming Events**

Technical Abstracts

by Joseph Kalish, Ph.D.

359 **Compounder's Corner**

362 **Perfumer's Shelf**

365 **Skin Research**

370 **Advancing Therapy**

373 **Readers' Questions**

Editor THOMAS R. FARRELL
Managing Editor GRACE McGRAW SMITH
Technical Editor JOSEPH KALISH, Ph.D.
Raw Material Editor HARRY G. KELBLY
Production Consultant FRANCIS CHILSON
Art Director MAX FRANKEL

Drug & Cosmetic Industry is published monthly by Drug Markets, Inc., Frazer V. Sinclair, President and Treasurer; Thomas R. Farrell, Vice-president and Secretary. Editorial and General Office: 101 West 31st St., New York 1, N. Y., U. S. A. Publication Address: Sun Printing Corp., 28 Renne Ave., Pittsfield, Mass., U. S. A.

Business Manager, Frazer V. Sinclair; Advertising Manager, P. W. Alexander; Advertising Representatives, Walter M. Brauneiss, C. R. Keeley; Production Manager, Katherine Hyde; Circulation Manager, Harry G. Kelbly.

Midwestern Advertising Representative: Dwight Early and Sons, 100 No. LaSalle St., Chicago 2, Telephone, CEntral 6-2184.

Subscription price $3.00 a year, in advance. Foreign Countries, $5.00. Single copies, 35c; Back issues 50c. Entered as Second Class Matter, January 1, 1928 at the Post Office at Pittsfield. Mass., under the Act of March 3, 1879. Member of Audit Bureau of Circulation.

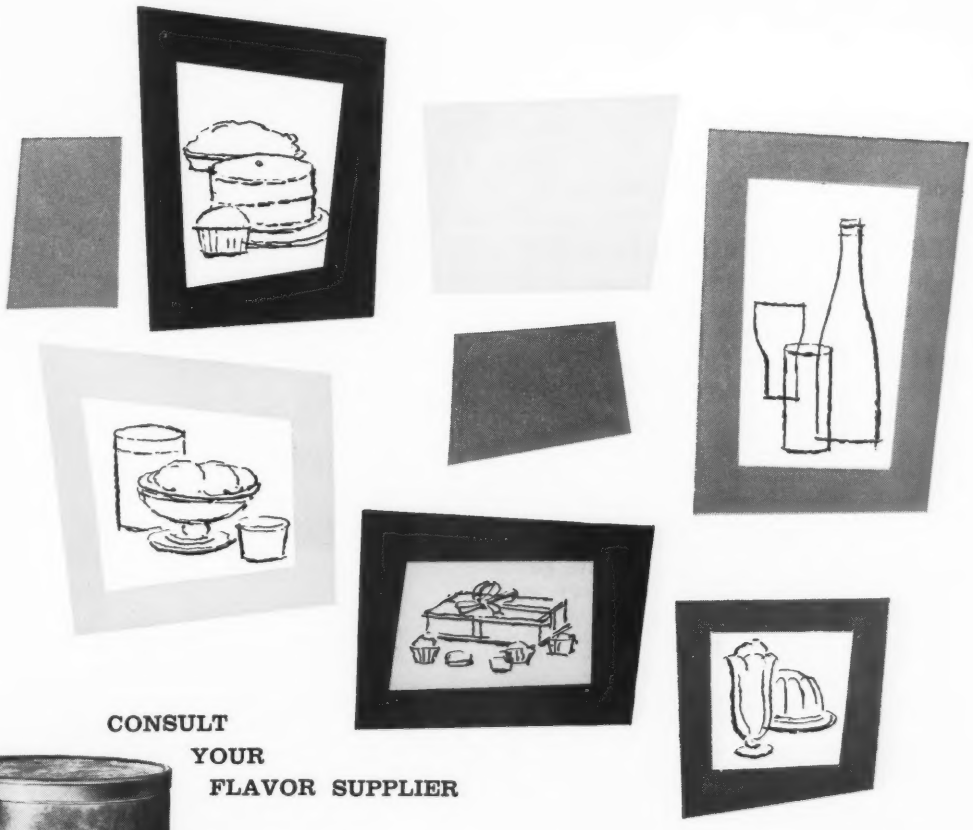
Contents Copyrighted 1959
by Drug Markets, Inc.

THE WAY TO FINER FLAVOR

IT'S THE FLAVOR, QUALITY AND UNIFORMITY THAT MAKE ZIMCO VANILLIN BEST FOR THE TASTE YOU WANT. THE ORIGINAL PURE LIGNIN VANILLIN, ZIMCO HAS THAT FINE FLAVOR AND AROMA WHICH CAN ONLY RESULT FROM CONTINUOUS RESEARCH AND DEVELOPMENT

ZIMCO® VANILLIN

U.S.P.



CONSULT YOUR FLAVOR SUPPLIER

Sterwin Chemicals Inc.

SUBSIDIARY OF STERLING DRUG INC.

1450 BROADWAY, NEW YORK 18, N.Y.
2020 Greenwood Avenue, Evanston, ILL.

KEEP YOUR EYE ON STERWIN

BRANCH OFFICES: Atlanta • Buffalo • Dallas • Evanston (Ill.) • Kansas City (Mo.) • Los Angeles • Minneapolis • Portland (Ore.) • St. Louis

WAREHOUSES IN PRINCIPAL CITIES

WORLD'S LARGEST SUPPLIERS OF VANILLIN

UNIFORMITY
you can rely on...

Refined and sun-bleached from the world's finest Crude Beeswaxes,

BEEHIVE BRAND BEESWAX

undergoes rigorous chemical and physical tests to assure:

1. Uniform Purity
2. Uniform Texture
3. Uniform Whiteness

Behind it is the reputation and integrity of a concern with more than a century of experience in blending beeswax formulae to special requirements. The guaranteed purity and uniform texture and whiteness of Beehive Brand Beeswax will simplify your laboratory work and assure more saleable quality in your finished products.

WILL & BAUMER Candle Co., Inc., Dept. DC, Syracuse, N. Y.

BEEHIVE BRAND *Beeswax*

Free Consultation Service

- The experimental data and practical manufacturing experience of more than 100 years' specialization in beeswax and beeswax compounds are at your service without cost or obligation.

Write us about your beeswax problems.

NEW YORK 16	BOSTON 9	CHICAGO 6	LOS ANGELES 15
15 E. 32nd St.	71 Broad St.	162 N. Franklin St.	952-4 S. Flower St.

A little

extra everything

. . . except price

When you add up the many "little" extras provided by Emersol 132 Lily Stearic Acid, you obtain an impressive difference in your product performance. And, this improvement is truly *free* because Emersol 132 costs no more than other triple pressed stearic acids.

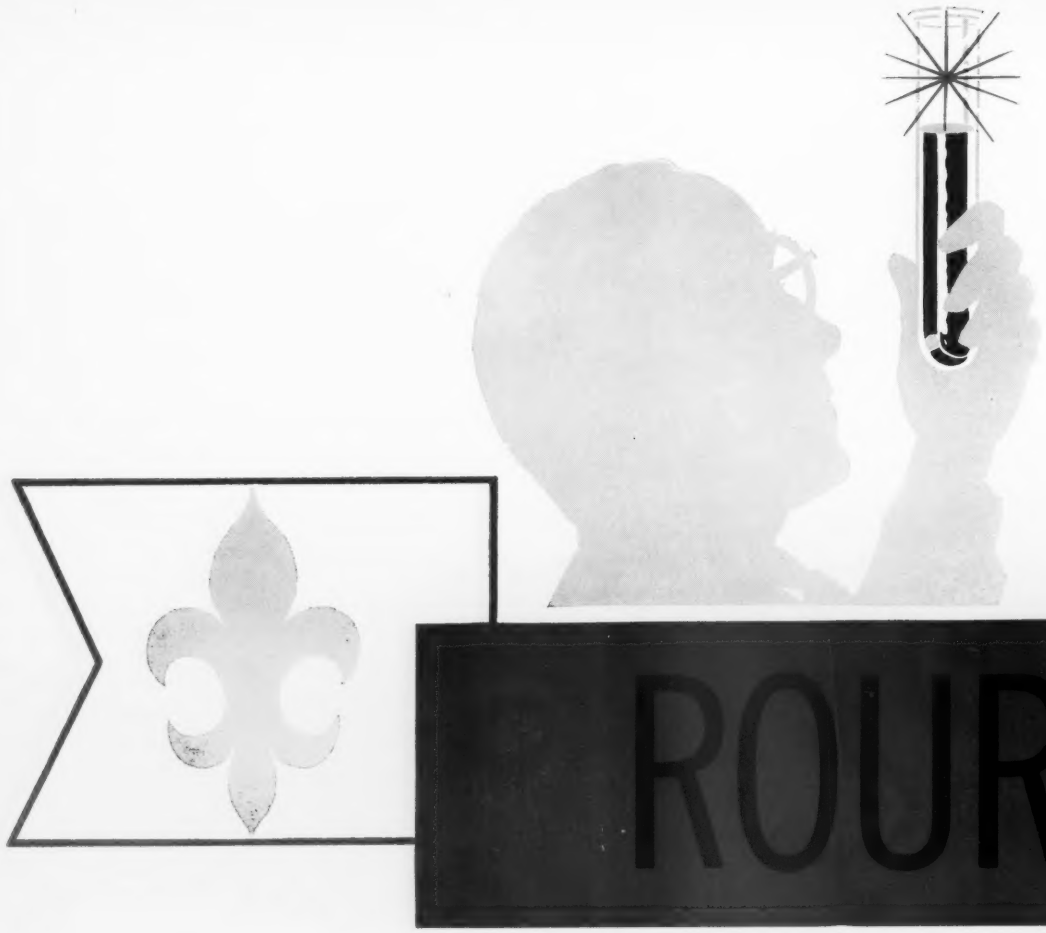
Prove to yourself what low iodine value (less than 0.5), water-white color, unmatched color stability, and controlled crystallinity can do for your product. Write us for a sample today.

EMERSOL®
STEARIC ACIDS

Carew Tower, Cincinnati 2, Ohio

Fatty Acid Sales Department Emery **Industries, Inc.**

Vopcolene Division, Los Angeles—Emery Industries (Canada), London, Ontario Export Department, Cincinnati



WORLD-WIDE RESOURCES
WORLD-WIDE SERVICES

Roure-Bertrand Fils, Grasse, and Justin Dupont, Argenteuil, France, as well as their facilities in North Africa, India, the Far East and South America, have for decades been prime processors of basic ingredients for the perfumers of the world.

Their creative genius is attested by the many proven international successes in the field of fragrance requirements . . . be it in the development of original perfumes, colognes, aerosols, cosmetics, soaps and other toiletries . . . or in the masking area where odors have to be covered rather than developed.

Roure-Dupont, Inc. technical staff is in a unique position to put its vast international facilities and know-how at your disposal.

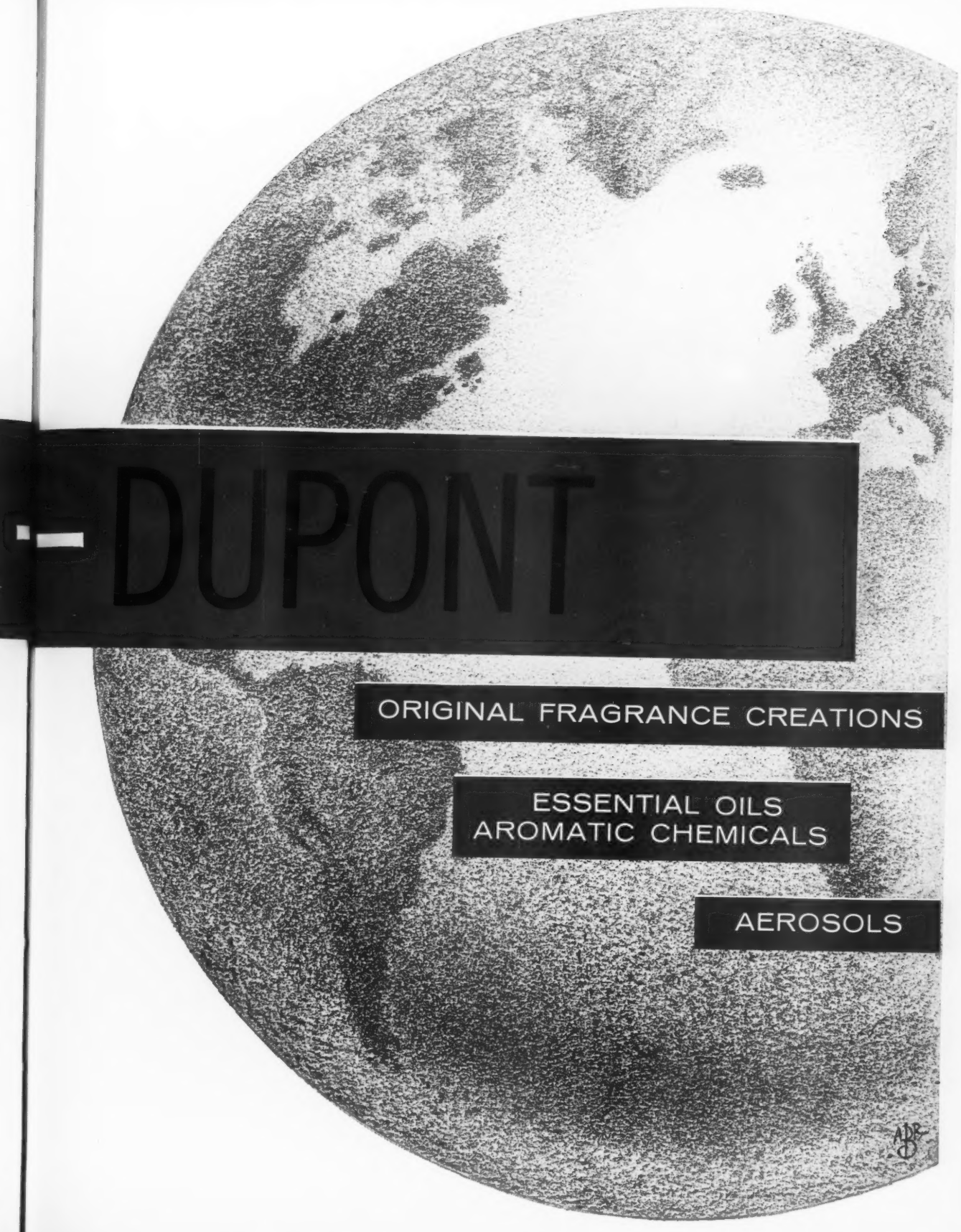
ROURE-DUPONT, INC.

Sole Agents for the United States and Canada for
ROURE-BERTRAND FILS et JUSTIN DUPONT, Paris, Grasse

CHICAGO
510 North Dearborn

366 Madison Avenue, New York
• MURRAY HILL 7-5830 •

HOLLYWOOD
5523 Sunset Blvd.


DUPONT
ORIGINAL FRAGRANCE CREATIONS
ESSENTIAL OILS
AROMATIC CHEMICALS
AEROSOLS

Only one sugar offers you such a variety of important physical and chemical properties

- low sweetness
- soluble, uniform
- free flowing, anti-caking aid
- flavor-enhancing
- pigment-absorbing
- non-reacting with other ingredients
- fermentation agent
- mild, almost tasteless triturate

LACTOSE: pure milk sugar

Lactose can improve your present products...help you develop new ones. Lactose can simplify your processing. Lactose can lower your costs. Seldom do you find a material that will do so many things so well.

That is why Lactose is attracting so much attention from both research and manufacturing executives. Virtually every week sees the discovery of exciting new possibilities for its use in the food, chemical and industrial fields.

Only Western can supply you with all forms of Lactose—five grades, ten granulations. And Western guarantees prompt delivery of the quantity and high quality you want.

Take a fresh look at the characteristics of Lactose. One of them may help solve a problem you are working on right now. For free samples and information, *write our Technical Service, Department 23C. (Tell us the applications you are considering.)*

WESTERN CONDENSING COMPANY

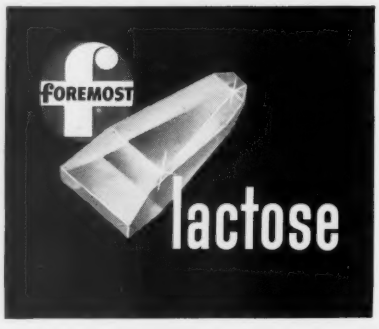
Appleton, Wisconsin

WORLD-WIDE SUPPLIER OF HIGH-QUALITY MILK DERIVATIVES

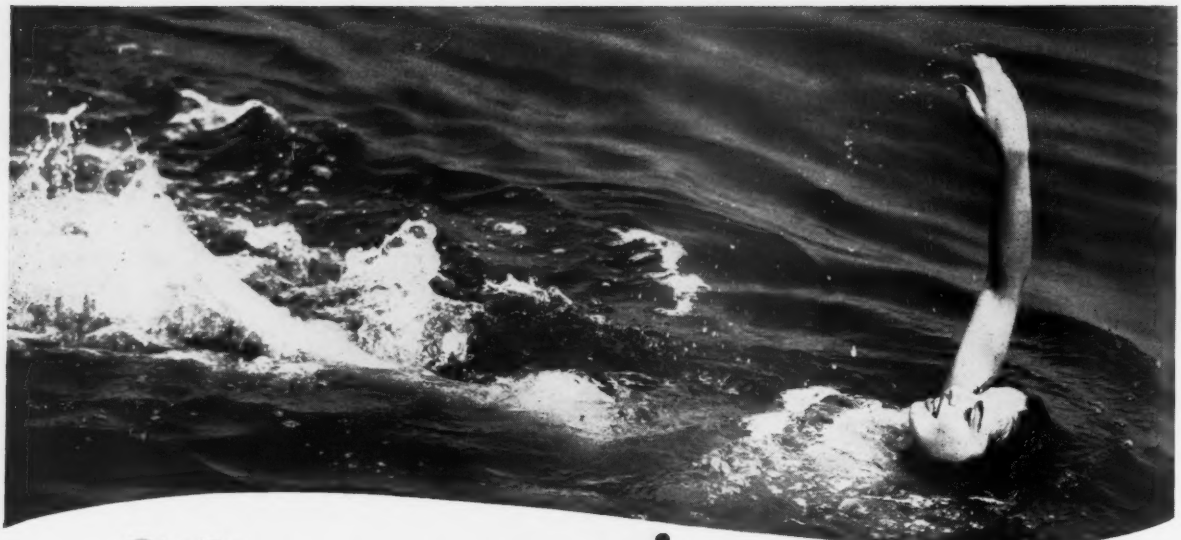
Distributed Nationally by

CHEMICAL DEPARTMENT

McKESSON & ROBBINS, INC.



Flight
Imagination unhampered by tradition,
ideas bold, original, and exclusive,
skill founded on 35 years of experience.
Call in Felton.
Felton
Felton Chemical Co., Inc., 599 Johnson Avenue, Brooklyn 37, N. Y.
Sales offices and plants in major cities, Canada and overseas



Silicones won't swim away

FORMULATE SUN-TAN LOTIONS, CREAMS with DOW CORNING FLUIDS

Water resistance . . . freedom from greasiness . . . longer lasting protection . . . these are the reasons why Dow Corning Silicones are the important ingredient in sun-tan lotions, hand-creams, pre-shave preparations, hair treatments, and other toilet goods or cosmetics.

Dow Corning silicone fluids improve performance . . . make the product easier to spread . . . make it stay on the skin and protect against water-borne irritants, at work or at play.

Physiologically harmless, Dow Corning silicone fluids are ideal cosmetic ingredients. They're colorless, odorless and inert; won't turn rancid or gummy; are virtually unaffected by heat, cold or water. It's this combination of properties that enables Dow Corning Silicones to make good products better.

For information, data and samples, contact the technical representatives in any of our branch offices, or write direct to Dow Corning Corporation.

first in silicones

Dow Corning CORPORATION
MIDLAND, MICHIGAN

ATLANTA BOSTON CHICAGO CLEVELAND DALLAS DETROIT LOS ANGELES NEW YORK WASHINGTON, D. C.
CANADA: DOW CORNING SILICONES LTD., TORONTO GREAT BRITAIN: MIDLAND SILICONES LTD., LONDON FRANCE: ST. GOBAIN, PARIS

Good health has an energy and life all its own, an energy that makes work a challenge, play a joy. It burns bright in the body spurring the athlete to greater strength and speed, the dancer to a more subtle grace, the thinker to wider explorations of the unknown. Energy is the key to superb performance and the pharmaceuticals that enhance and protect it should be consistent with this objective as to taste and aroma. For the flavor of buoyant good health is as fresh and clean as a sparkling fall day on the newly groomed athletic field...and this quality can only be provided by experts who know **both** pharmaceuticals and flavor technology. In the Product Development Laboratories of D&O, this experience is available to you. Consult D&O.

Essentially for You!

D&O
ESTABLISHED 1798

OUR 160th YEAR OF SERVICE

DODGE & OLCOTT, INC.

180 Varick Street, New York 14, N. Y.

Sales Offices in Principal Cities

ESSENTIAL OILS AROMATIC CHEMICALS PERFUME BASES FLAVOR BASES DRY SOLUBLE SEASONINGS

From Heyden Newport

N.F. (F.F.C.)
As an odorant in soaps, hand lotions and other cosmetics and as an additive in flavoring compounds.
TECHNICAL
Useful for the synthesis of pharmaceuticals and organic chemicals.

PREFERRED SOURCE FOR HIGHEST PURITY AND UNIFORMITY

BENZALDEHYDE

When you process with Heyden Newport Benzaldehyde, you are assured of unsurpassed purity and uniformity in the characteristics you seek—chemical reactivity, volatility, odor and taste.

That's why leading cosmetic, aromatic and pharmaceutical producers rely on Heyden Newport as their basic source for this valuable intermediate.

For new product development, as well as for those now in commercial use, it will pay you to investigate the processing benefits of Benzaldehyde and its chlorinated derivatives, such as o-Chlorobenzaldehyde and p-Chlorobenzaldehyde.

Heyden Newport Benzaldehyde N.F. (F.F.C.) or Technical is shipped in 450 lb. stainless steel drums, 100 lb. glass carboys, and 40 lb. lined drums. Samples and technical data are available upon request.

Heyden Newport Chemical Corporation, 342 Madison Ave., New York 17, New York.

HEYDEN NEWPORT

Where tradition meets tomorrow in chemical progress

YOUR TURN TO CALL THE TUNE

A turn to Orbis has brought lasting success to many a manufacturer. You, too, will find it pays never to skimp in any scents—always to rely on Orbis odors of great quality and uniform economy.

While you're playing for money, play for keeps. See if an Orbis odor doesn't satisfy your demand for good profits from good products.

For instance: Sample these scents today. Write on your letterhead and we'll send, too, the Orbis catalogue of fine products.

Series No. 300 Orbis Odors

Bouquet CH
Bouquet TB
Bouquet Kashmiri
Carnation
Chypre
Cologne
Divinia
Florida
Gardenia
Heliotrope
Honeysuckle
Jasmin
Jockey Club
Lavender
Lilac
Millefleurs
Muguet
Narcisse
New Mown Hay
Rose
Sweet Pea
Violet
Wistaria

Always at these low Orbis prices:

25 and 50 lb. cans ..... $3.00 per lb.
5 lb. bottles ..... 3.15 per lb.
Trial Pounds ..... 3.25 per lb.

Series No. 600 Orbis Odors

Bouquet CH
Bouquet de Oriente
Bouquet Kashmiri
Bouquet Parisienne
Bouquet TB
Carnation
Chypre
Cologne
Corylopsis
Crechene
Cuir de Russie
Divinia
Florida
Gardenia
Heliotrope
Honeysuckle
Jasmin
Jockey Club
Lavender
Lilac
Magnolia
Millefleurs
Muguet
Narcisse
Neroli
New Mown Hay
Oriental
Rose
Sweet Pea
Violet
Wistaria

Always at these low Orbis prices:

25 lb. cans and 50 lb. cans ..... $6.00 per lb.
5 lb. bottles ..... 6.15 per lb.
Trial Pounds ..... 6.25 per lb.

Other Orbis Products

Essential Oils
Perfume Bases
Fruit Flavors
Oleoresins
Aromatic Chemicals
Cosmetic Raw Materials
Water Soluble Gums

ORBIS
PRODUCTS CORPORATION
601 W. 26th STREET
NEW YORK
WAtkins 4-7660

BANK ON ORBIS SCENTS AND SAVE DOLLARS

INSIDE SCIENCE

New Expanded Edition

The Vital Story of VITAMIN A

by Science Writer

THE "FIRST" VITAMIN

Vitamin A was probably the first to be discovered. As early as 1909 Hopkins and Stepp found that certain fat-soluble substances were necessary for the growth of mice and rats. Between 1913 and 1915, working independently, the teams of McCollum and Davis, and Osborne and Mendel revealed the existence of a fat-soluble fraction in butter, egg yolk and cod-liver oil, which was essential for the growth of laboratory animals. McCollum and Davis concluded that the unknown substance was organic in nature. They had, in effect, discovered vitamin A, even though they did not so name it.

An interesting point: McCollum and Davis noted that the word "vitamine," coined by Casimir Funk a year or so previously, might be used to describe the growth factor they had found. Subsequently, McCollum (and Kennedy) reversed this opinion and suggested that the unknown substances which induced growth be called *fat-soluble A* and *water-soluble B*. In their opinion these phrases better described the unknown factor. Casimir Funk disagreed, however, pointing out that, to be truly descriptive, the phrases should read *growth-promoting fat-soluble A*, etc. This obviously being cumbersome, Funk suggested the designations: vitamine A, vitamine B, and so on. These (with the final "e" omitted) are now firmly embedded in the language.

Other investigators worked on the problem of carotene, beginning in 1831 when Wackenroder isolated that substance from carrots. We shall see later how vitamin A and the carotenes, particularly beta carotene, are interrelated.

TRACKED DOWN

Various tries at isolating vitamin A were made in the 1920s. Investigators in Japan and England attempted without success to extract the elusive vitamin from cod-liver oil.

After establishing the structural formula of beta carotene, Paul Karrer of Switzerland turned his attention to vitamin A. He and his colleagues, using halibut-liver oil (which has a much higher potency than cod-liver oil) succeeded in determining the structure of the vitamin A molecule in 1931.

WHAT IT IS

Pure vitamin A crystals are pale yellow in color. They are soluble in fat and in fat solvents but not in water. The chemist's formula is $C_{20}H_{30}O$, expressing the vitamin's composition of carbon, hydrogen, and oxygen. Beta carotene has the formula $C_{40}H_{56}$.

Vitamin A is stable to light and heat, but is destroyed by oxidation and ultraviolet light.

Two vitamins A have been discovered. Vitamin A_1 occurs in animal products such as egg yolk, liver, butter, and in the livers of salt water fish. Vitamin A_2 is found in fresh-water fish livers.

As now used by pharmaceutical and food manufacturers, vitamin A is in liquid form — in solution in edible, vegetable oil — or in dry granular form in which tiny droplets of the liquid vitamin are encased in a dry, edible material.

ACTION

Human beings receive their vitamin A from many sources. They eat vegetable foods rich in beta carotene (a provitamin A) which is then converted by the body into a vitamin. They eat animal products which contain the vitamin. They eat processed foods which are fortified with beta carotene or vitamin A or both. They use pharmaceutical preparations of the vitamin, with or without other vitamins, for therapeutic or protective effect.

The liver has been found to be the main storage site of vitamin A. It is also lodged in the kidneys, lungs, adrenal glands, and body fat.

It is believed that provitamins A are converted to the vitamin in the intestinal wall, the liver, and other parts of the body through the action of the enzyme called carotenase.

Vitamin A is absorbed primarily in the healthy intestine and is carried in the lymph and blood to the body's storage depots.

HOW MUCH DO WE NEED?

According to the Food and Nutrition Board of the National Academy of Science — National Research Council, in its 1958 publication #589, vitamin A is needed daily (in various amounts depending on age and sex) to maintain good nutrition of healthy persons in the U. S. A. The following table expresses the Board's recommendations in International Units of the vitamin.

NATIONAL RESEARCH COUNCIL RECOMMENDATIONS FOR DAILY VITAMIN A INTAKE

Men (all ages)	5,000	Children (1–3 years)	2,000
Women (all ages)	5,000	Children (4–6 years)	2,500
Women (pregnant, second half)	6,000	Children (7–9 years)	3,500
Women (lactating)	8,000	Children (10–12 years)	4,500
Infants (2–6 months)	1,500	Boys (13–19 years)	5,000
Infants (7–12 months)	1,500	Girls (13–19 years)	5,000

The Food & Drug Administration of the U. S. Department of Health, Education and Welfare has set the following standards as being the *minimum* daily requirement. In other words, these amounts are the *least* which can be ingested to prevent recognizable signs of deficiency disease from developing. There is an opinion among nutrition experts that the *minimum* amount of a vitamin is not necessarily the best criterion.

F. & D. A. *MINIMUM* DAILY REQUIREMENTS OF VITAMIN A

(Measurements in U. S. Pharmacopeia (U.S.P.) units which equal International Units)

Men and Women	4,000	Children (1–11 years)	3,000
Adolescents (12–19 years)	4,000	Infants (to 1 year)	1,500

DEFICIENCIES AND MEDICAL USES

Correcting a vitamin A deficiency has little of the instant, dramatic impact that, for example, vitamin C has in curing scurvy.

Because of the body's ability to store quantities of vitamin A which are released as needed, a considerable time passes before the vitamin A deficiency develops.

Lack of enough vitamin A shows itself in several ways.

"Dark adaptation" of the eyes is diminished. Go from a brightly lighted place to one which is dim or dark; notice how your eyes need a few moments to adjust. This is known as *dark adaptation*. With vitamin A deficiency, the power of the eyes to make the adjustment quickly and completely is lessened, sometimes severely or dangerously.

The skin, too, becomes dry from lack of vitamin A. The linings of the hair follicles harden and become plugged, thus interfering with the secretion of the skin's oil glands.

Other epithelial tissues, such as the linings of the upper parts of the respiratory passages, the genito-urinary tract, the alimentary canal, may not function properly.

Vitamin A is necessary for growth. When children fail to gain weight a deficiency of the vitamin may be suspected.

Physicians treat the deficiency states with therapeutic doses of the vitamin. To prevent their development or recurrence they may prescribe supplementary dosages.

MICROGRAMS, U. S. P. UNITS, INTERNATIONAL UNITS

The measurement of vitamin A is made in *International Units* which may be abbreviated as I.U. or i.u.

One International Unit of vitamin A is equivalent to:

— 0.344 microgram of crystalline vitamin A acetate.
— 0.300 microgram of crystalline vitamin A alcohol.
— the activity of 0.6 microgram of pure beta carotene.
— one U. S. P. unit of vitamin A.

In everyday measurement, one ounce equals 94,500,000 International Units of vitamin A alcohol.

Vitamin A is available to pharmaceutical and food manufacturers in forms having standardized potencies as, for example, liquid products containing 1,000,000 units per gram or dry beadlets having 250,000 or 500,000 units per gram.

MEASURING VITAMIN A

The best known and most commonly used method of measuring vitamin A is the Carr-Price spectrometric assay. In this chemical test a measurable blue color appears when a reagent (antimony trichloride) is added to the vitamin. The so-called "blue value" when measured photometrically can be converted by a mathematical formula into International Units of vitamin A.

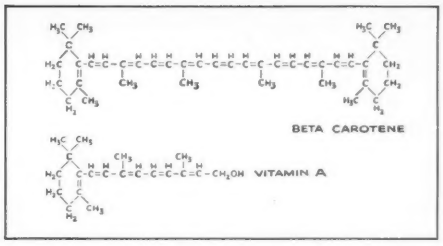
PROVITAMIN AND VITAMIN

The carotenes and vitamin A are known to be closely related. The former are known as precursors, or *provitamins*. It is one of nature's singular facts that the carotenes contain no vitamin A and yet have important vitamin A value. The body has a mechanism by which carotene is converted to vitamin A.

Four carotenoids: alpha-, beta-, and gamma carotene, and cryptoxanthin are known to be provitamins A. Of these, beta carotene is the most valuable in supplying the vitamin's value. The carotenes exist as colors in vegetable material. Example: carrots from which the word "carotene" was derived.

The chemical formulae of the carotenes show their relationship to vitamin A. This is demonstrated in the diagram that follows showing vitamin A and beta carotene.

Theoretically, one molecule of beta carotene could be expected to yield two of vitamin A. Actually this efficiency of conversion is not normally achieved in the human body.



GOOD SOURCES

Margarine, which has been fortified with vitamin A or with a combination of the vitamin and beta carotene (for safe coloring, plus nutritional value) supplies important amounts in our daily diet. Butter, too, can be a valuable source. It contains vitamin A in quantities which vary as the dairy cows' diet varies between seasons. Another good source of vitamin A is beef or calves' liver.

There are many foods which contribute vitamin A value through their supplies of the carotenes. Among these are apricots, beet greens, broccoli, carrots, kale, spinach, sweet potatoes, and turnip greens.

MOSTLY, IT'S MADE

After the chemical composition was determined by Paul Karrer and the product was crystallized by Holmes and Corbett, many attempts were made to synthesize the vitamin. The most successful, that of the Roche research team headed by Otto Isler, supplies a large portion of the world's requirements.

Vitamin A is also extracted from natural sources such as the liver of fish. Esthetically and practically, however, synthetic vitamin A has been found the most satisfactory for products used by human beings.

The U. S. production of synthetic (man-made) vitamin A is measured in tons. This huge annual production is enough to supply daily 170,000,000 people, the total population of the United States, with the 5000 international units (recommended by the National Research Council for daily adult intake) and still have enough synthetic vitamin A left over for use in animal feeds, pet foods, for export, etc. Of course, not everyone does receive his daily requirements through the medium of manufactured vitamin A. Yet, the *potential* is always there.

Pure beta carotene, so closely allied with vitamin A, also is man-made in large amounts for use in safely coloring and fortifying foods. Since it was first synthesized in Roche research laboratories, beta carotene Roche has been produced in ever-increasing quantities to meet the demands of the food industry for safe, sure, economical, yellow color with nutritional value as a bonus.

REPRINTS ON REQUEST

This article is published as a service by Hoffmann - La Roche. It is one of a group which outlines knowledge of the vitamins. Reprints of this and all others in the Roche series are available without charge. Reasonable quantities will be supplied gratis to educators for use in their courses as teaching aids.

Please address all correspondence and requests to the Vitamin Division, Department of Education, Hoffmann - La Roche Inc., Nutley 10, New Jersey. In Canada: Hoffmann - La Roche Ltd., 1956 Bourdon Street, St. Laurent, Montreal 9, P. Q.

ROCHE ROUND THE WORLD: Affiliated Companies in — Basel • Bogotá • Bombay • Brussels • Buenos Aires • Grenzach (Baden) • Havana • Istanbul • Johannesburg • London • Madrid Mexico City • Milan • Montevideo • Paris • Rio de Janeiro Stockholm • Sydney • Tokyo • Vienna • Agencies in other countries

---

Trademark: Roche®

HOLDING THE MIRROR TO MOTHER NATURE!

Specialties FROM HAARMANN & REIMER

NEROFLOR EXTRA For hundreds of years the most important top note in successful perfumery has been Neroli. Its importance today is equally great. Neroflor is a flowery specialty with a pronounced odor of Neroli Oil and Orange Blossom with an interesting animal under-note. Non-irritating, non-discoloring, and excellent fixative. Enhances odor value in compounds. Also an exceptionally fine modifier for colognes.

NEROFLOR SAVON "Savon" possesses the same merits, stable in soaps, and recommended for low priced purposes.

MUGOFLOR A new chemical which is destined to become one of the most important perfume raw materials. True Muguet in character, it is a marvelous blending agent. Completely new chemical of the Muguet type of tenacious, intense, yet fine fresh floral character, neither irritant nor discoloring, absolutely stable in soaps.

AGRUMEN ALDEHYDE A chemical body of unusual merit. Strengthens and refines not only the fresh green note, but also the characteristic note common to all Citrus oils.

VERONA SPECIALTIES

CYCLAMAL From the finest fragrances in so-called handkerchief extracts, soaps and cosmetics to detergents and household products, this universally accepted perfume base has an important place. Economical in use, stable, non-coloring, it imparts the fresh, clean fragrance so greatly desired.

VERONOL A versatile aldehyde of great power. An interesting top note and blending agent, it adds character and quality to any perfume. Use 1/10 to 1%.

FLORANOL An ester to achieve the natural character in Synthetic Rose to which it adds that slight apricot fruitiness found in the fresh flower. Reasonable in price, stable, non-irritating and non-coloring, it is of inestimable value to the perfumer.

SPECIALTIES BY J & E SOZIO, Grasse, France

EGAFLOR ROSE VB A natural base replacement for Attar of Rose with great economy.

ROSE HV Compounded rose base processed by extraction in presence of flowers other than Rose de Mai.

ROSE HM The same base and process, with Rose de Mai.

CHENIRAX Soluble product of extraction of Mousse de Chene and Gum Styrax.

CHENAMBROL Soluble product of extraction of Mousse de Chene and Ciste. Available also decolorized.

DISTIRIS Reconstitution from fractions of natural oils other than Iris Butter, distilled over Iris Roots.

DISTIRONE Reconstitution of Absolute Iris (Irone) odor in a mixture subsequently distilled over Orris Roots.

You are invited to send for samples of any specialties that interest you.

VERONA

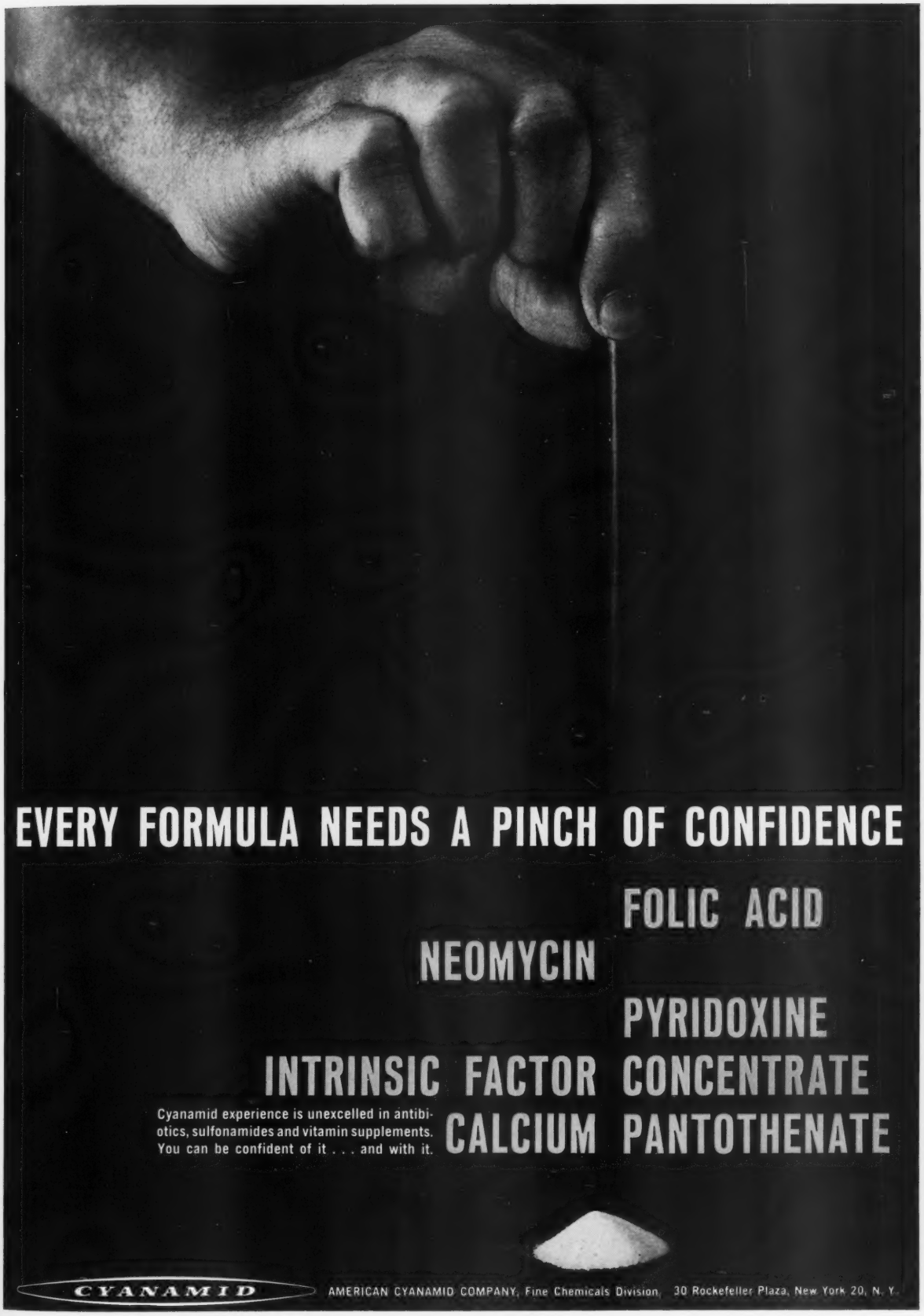
VERONA AROMATICS

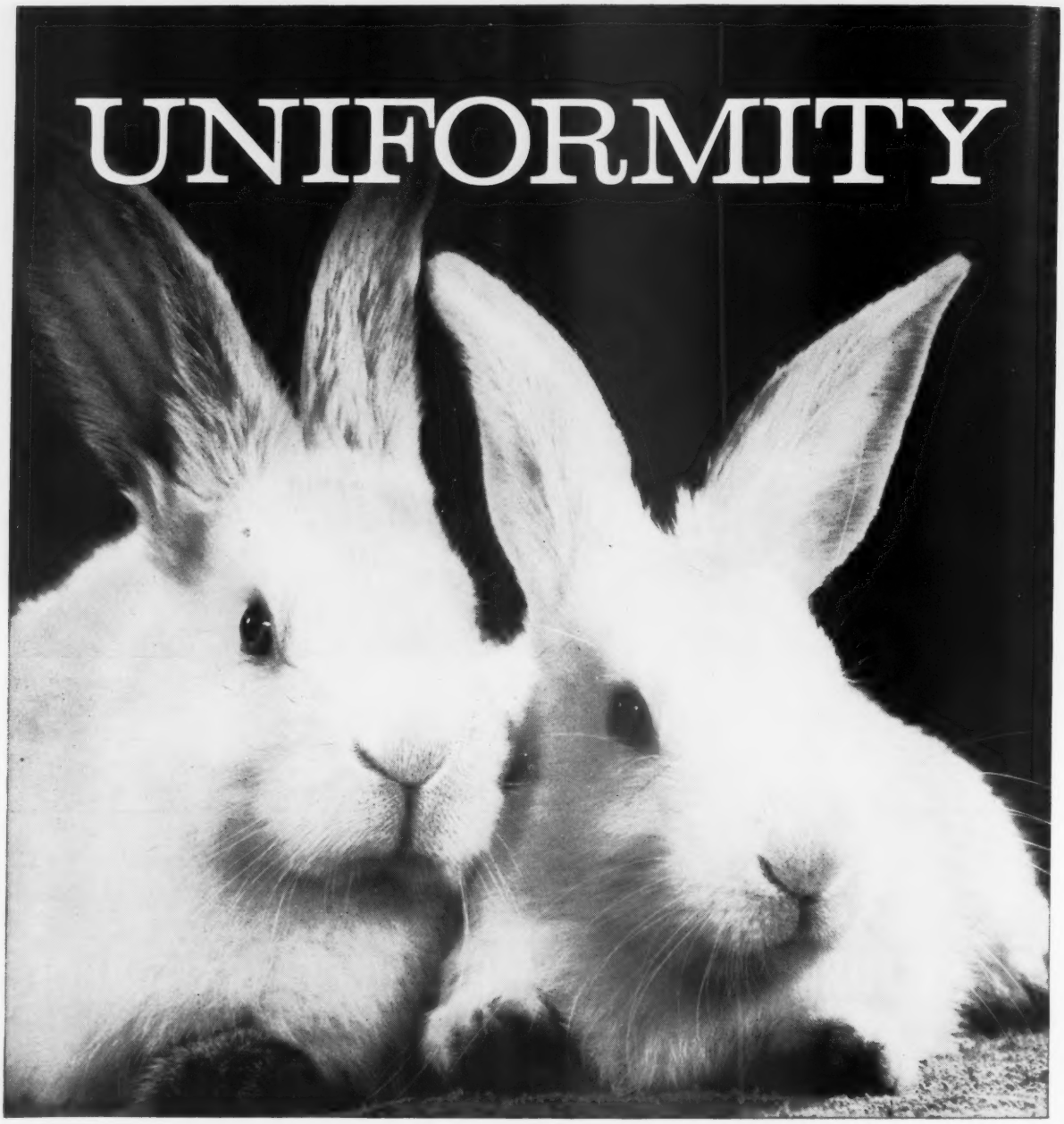
A DIVISION OF VERONA-PHARMA CHEMICAL CORP.

Plant and Main Office:

26 VERONA AVENUE, NEWARK 4, N. J.

1210 ROSEDALE AVENUE, CHICAGO, ILL.


EVERY FORMULA NEEDS A PINCH OF CONFIDENCE
FOLIC ACID
NEOMYCIN
PYRIDOXINE
INTRINSIC FACTOR CONCENTRATE
Cyanamid experience is unexcelled in antibiotics, sulfonamides and vitamin supplements. You can be confident of it . . . and with it.
CALCIUM PANTOTHENATE
CYANAMID
AMERICAN CYANAMID COMPANY, Fine Chemicals Division, 30 Rockefeller Plaza, New York 20, N. Y.



Columbia-Southern Sodium Bicarbonate U.S.P. gives you superior quality control

Made to highest standards, Columbia-Southern Sodium Bicarbonate U.S.P. is produced in powdered and granular grades to meet your individual requirements. The consistent uniformity from shipment to shipment assures you of superior quality control, smoother blending, lower production costs.

Whether you compound or re-package, always specify Columbia-Southern Sodium Bicarbonate U.S.P.—pure, white and free-flowing.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION

A Subsidiary of Pittsburgh Plate Glass Company
One Gateway Center • Pittsburgh 22, Pa.

DISTRICT OFFICES: Cincinnati, Charlotte, Chicago, Cleveland, Boston, New York, St. Louis, Minneapolis, New Orleans, Dallas, Houston, Pittsburgh, Philadelphia, San Francisco

IN CANADA: Standard Chemical Limited

INDUSTRY'S STANDARD FOR OVER 100 YEARS...

Atlas

COSMETIC COLORS

Recognized for their superior working qualities, incomparable brilliance and dependable uniformity.

Used in the United States and throughout the world

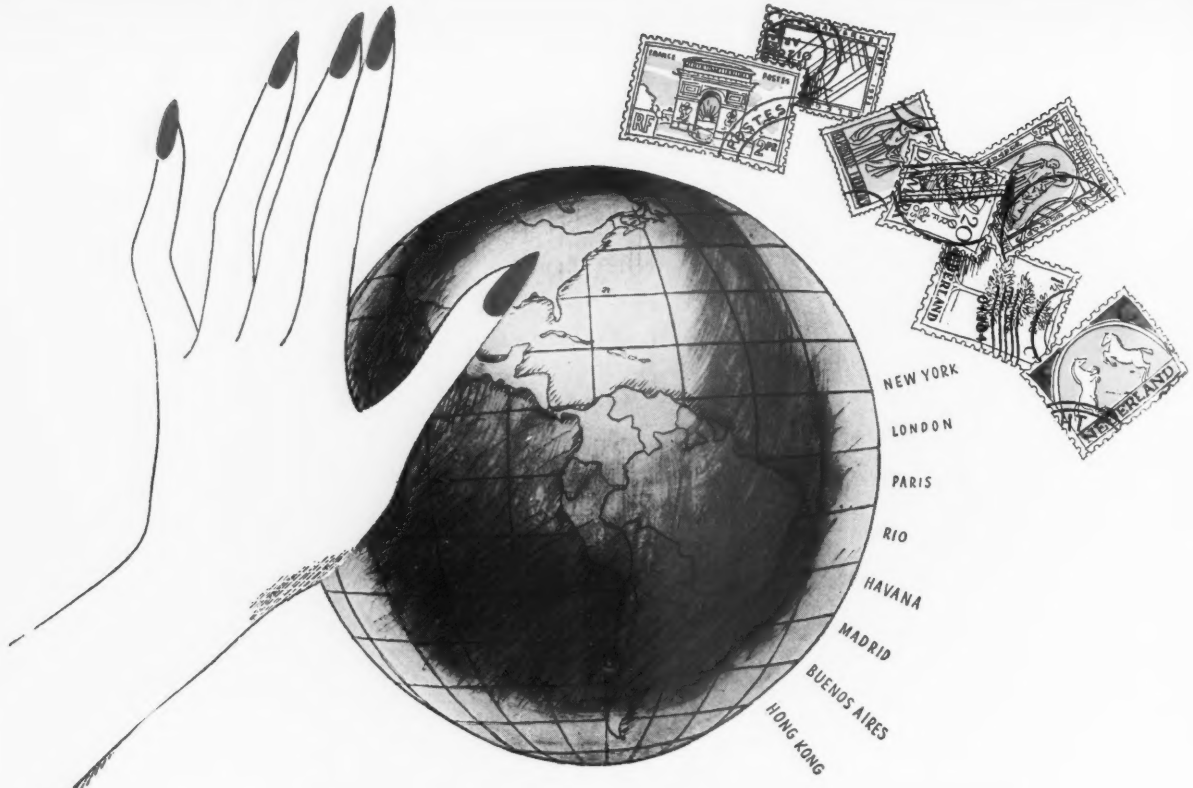
FIRST PRODUCERS OF CERTIFIED COLORS ESTABLISHED 1851

H. KOHNSTAMM & COMPANY Inc.

161 AVENUE OF THE AMERICAS, NEW YORK 13

11-13 E. ILLINOIS ST., CHICAGO 11 • 2632 E. 54 ST., HUNTINGTON PK., CALIF.

BRANCHES IN OTHER PRINCIPAL CITIES OF THE U.S.A. AND THROUGHOUT THE WORLD



The Foremost Name in NEW Product Development

DURLIN

for the "ALL NEW" bulk nail polish

First **in Research**
First **in New Improved Clinically Tested Nail Enamels**
First **in Fashion Right Colors**
First **in Technical and Packaging Service**

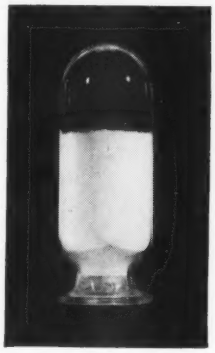
DURLIN CO.

744 Broad Street, Newark 2, N. J.

Cable Address: Durlin Newark Newjersey

glamorous hands *around the world . . .*

Reheis Chlorhydrol...



basic ingredient for anti-perspirants and deodorants

Used in *creams, lotions, sprays* and *powders*

Available in five forms, granular, fine, medium, impalpable, 50% w/w solution, *Chlorhydrol* (aluminum chlorhydroxide complex) is non-destructive to fabrics . . . non-irritating to skin . . . requires no buffering. Its freshening, astringent properties make it a valuable addition to a wide range of external body products.

Write for complete data.

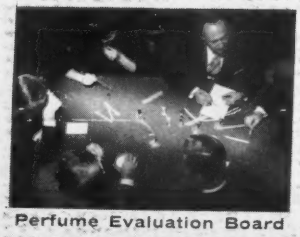
FINE REHEIS CHEMICALS

REHEIS COMPANY, INC.
Berkeley Heights • New Jersey
manufacturers of
Fine Chemicals

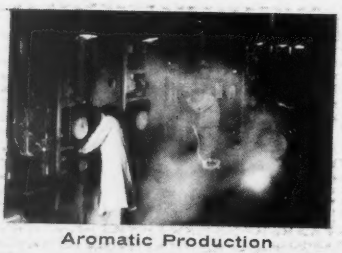
1407

Creative Perfumer

Production



Perfume Evaluation Board

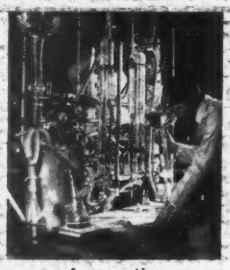


Aromatic Production

Sales

Cosmetic Research

Chemical Engineering



Aromatic
Chemical Research

Quality Control

People...

THE IMPORTANT INGREDIENT

The success of your perfume is the result of the abilities of the many creative, technical and service *people,* who have a part in the creation and production of the perfume itself.

VAH Perfume Evaluation Board... Unmatched in their ability, these professionals screen every perfume sample on the basis of its intrinsic beauty as a fragrance, its adaptability to a specific market, its potential level of consumer acceptance, its relationship to both competitive and companion items... Not the opinion of an amateur panel, but the recommendation of this experienced *board of experts* goes with every perfume sample submitted by VAH.

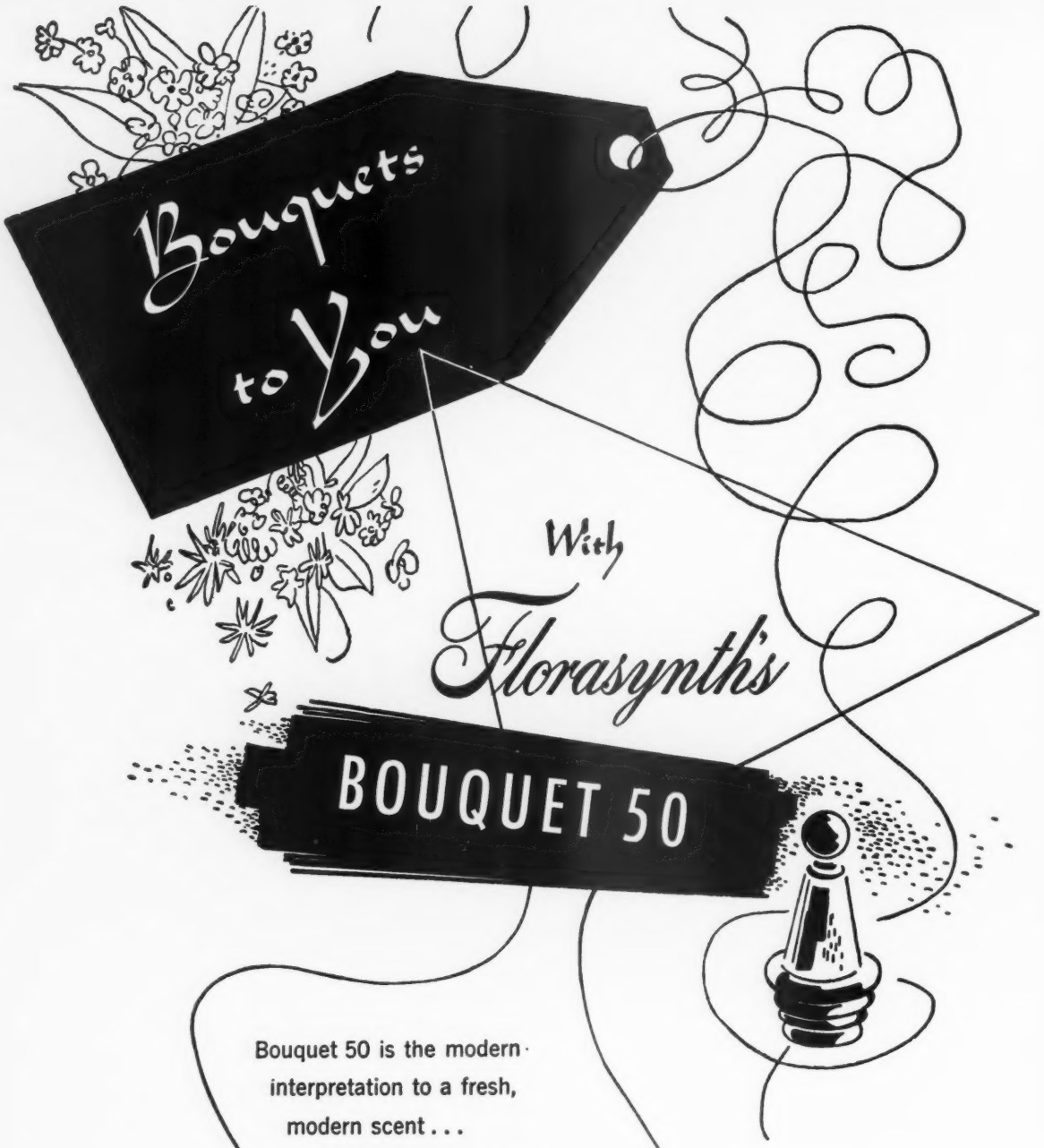
A perfume by VAH has all the ingredients for beauty and success.

van Ameringen-Haebler, Inc.

521 WEST 57th STREET · NEW YORK 19, NEW YORK

van Ameringen-Haebler, S.A.R.L.
Paris, France

van Ameringen-Haebler, Ltd.
Toronto, Canada



Bouquet 50 is the modern interpretation to a fresh, modern scent . . . the search for the new and intriguing . . . distinctly different . . . timed for successful products . . . all-ways . . .

Florasynth LABORATORIES, INC

EXECUTIVE OFFICES: 900 VAN NEST AVE., (BOX 12) NEW YORK 62, N. Y.

CHICAGO 6 · LOS ANGELES 21

BOSTON • CINCINNATI 2 • DETROIT • DALLAS
MEMPHIS • NEW ORLEANS 12 • ST. LOUIS 2
SAN FRANCISCO

Florasynth Labs. (Canada Ltd.) • Montreal, Toronto, Vancouver, Winnipeg • Agts. & Dist. in Mexico—Drogueria & Farmacia Mex. S. A., Mexico 1, D. F.

IT TAKES A SPECIALIST LIKE ONYX TO BRING YOU A COMPLETE LINE OF LAURYL SULFATES

Join the world's best-known manufacturers of dentifrice, cosmetic and industrial products who rely on ONYX as a steady, dependable source for lauryl sulfates.

There is a type and grade for every purpose.

Use the handy coupon for free samples and technical data.

ONYX OIL & CHEMICAL CO.
JERSEY CITY 2, N. J.

☐ **SEND TECHNICAL LITERATURE**
☐ **SEND SAMPLES**

Our application for lauryl sulfates is .....

.....

Name ..... **Title** .....

Company .....

Address .....

ONYX CHEMICALS

our forty-ninth year

Onyx Oil & Chemical Company / Jersey City 2, New Jersey

Announcing...

increased production facilities for J.T. BAKER

FERROUS SULFATE

U.S.P., Exsiccated Powder

physically uniform for

CAPSULES and TABLETS

THE QUALITY YOU NEED: Dependably pure, dependably uniform, lot after lot, ton after ton. Color is pale grayish-white.

THE FORM YOU NEED: A free-flowing powder that mixes readily. Ideal for manufacture of tablets and capsules.

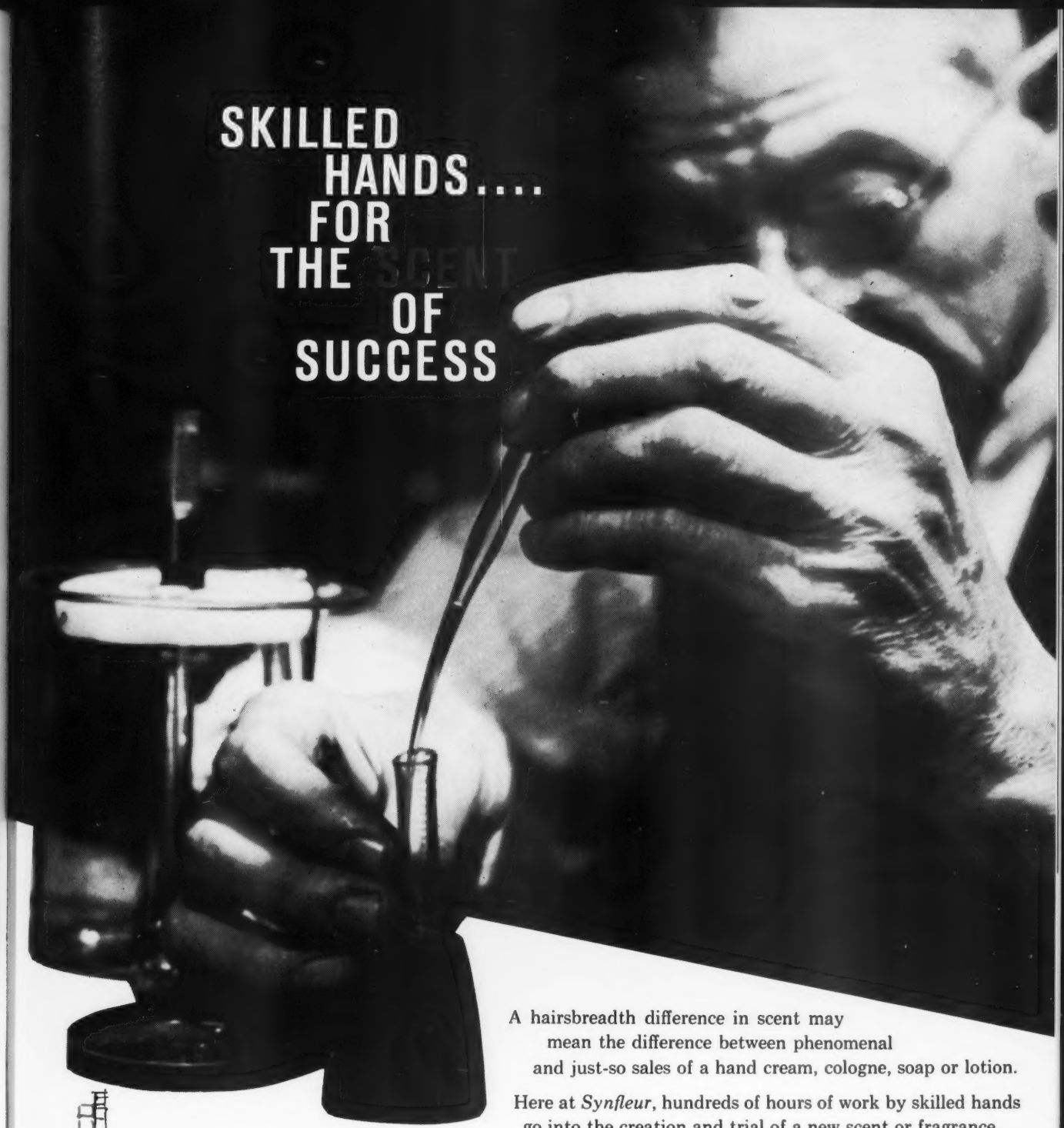
THE PRICE YOU NEED: Economical to buy and economical to work with. Why not write for prices, samples and Product Data Sheet?

J. T. Baker Ferrous Sulfate, U.S.P., Exsiccated Powder, is available in 400 and 100-lb. drums, and in 25-lb. cartons, all with polyethylene liners. You can rely on Baker for prompt shipment of any quantity from stocks in Phillipsburg and Chicago.

For information, send card or letter to:

J. T. Baker Chemical Co.
Phillipsburg, New Jersey

J.T.Baker CHEMICAL

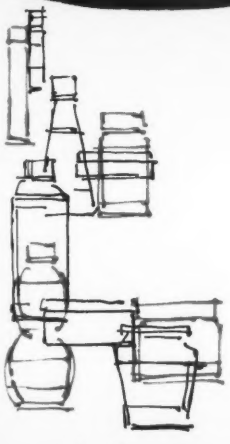


A hairsbreadth difference in scent may mean the difference between phenomenal and just-so sales of a hand cream, cologne, soap or lotion.

Here at *Synfleur*, hundreds of hours of work by skilled hands go into the creation and trial of a new scent or fragrance.

We originate and develop new formulas and perfume specialties of every type to solve the special needs and problems of our customers.

Whether you're up-dating an old product or brainstorming a new one, depend on *Synfleur*, to help you put the "sweet smell of success" into your product. Over 69 years of perfuming "know-how" are at your service.



Synfleur SCIENTIFIC LABORATORIES, INC.
MONTICELLO, N. Y.

ATLANTA • DETROIT • LOS ANGELES • NEW YORK • SAN FRANCISCO • MEXICO, D. F. • HAVANA • MONTREAL • Guatemala City • San Salvador • San Pedro Sula
Managua • San Jose • Panama • Barranquilla • Medellin • Bogota • Caracas • Maracaibo • Rio de Janeiro • Buenos Aires • Santiago

New York Sales Office: Telephone Plaza 7-1960

TURNS IDEAS INTO PRODUCTS

Mylase 100 is an α-amylase ten times stronger than ordinary diastases derived from Aspergillus oryzae. Its high activity-to-weight ratio makes feasible pharmaceutical formulations previously limited by excessive ingredient bulk.

A New High in Diastatic Activity

Mylase 100 is standardized at 191,000 Wallerstein Units of α-amylase activity. Just one gram dextrinizes 4.2 pounds of soluble starch. In terms of correctives for dyspepsia, digestive insufficiencies, or just plain overeating, *Mylase 100 can give your products a diastatic effect never before attainable.*

Ideas into Products into Profits!

Wallerstein R&D men have many ideas on Mylase 100 and how it can create new products for you. If your field is in digestive aids, nutritional supplements, geriatric or pediatric preparations, get in touch with Gerry Gray. The information he can give you can open up new markets for you.

PHARMACEUTICAL DIVISION
180 Madison Avenue, New York 16, N. Y.
LExington 2-8730

Wallerstein Manufactures Enzymes and Antibiotics for the Pharmaceutical and Cosmetic Industries

the hand is quicker when color catches the eye!

NATIONAL® CERTIFIED COLORS

Just a bit of color can do a tremendous job for you at point of sale. Color identifies your product, builds confidence in its consistent quality, invites purchase. Since color costs so little, economy says *use the best!*

National Aniline has been producing the broadest spectrum of certified drug and cosmetic colors for more than a half century. They are made from the finest raw materials, under strict quality controls that parallel your own. They're always absolutely uniform.

We will be glad to formulate shades for your new and existing preparations. You'll find our formulations fully compatible, stable, economical and precisely reproducible time after time.

NATIONAL ANILINE DIVISION
40 RECTOR STREET, NEW YORK 6, N. Y.
Atlanta Boston Charlotte Chicago Greensboro Los Angeles
Philadelphia Portland, Ore. Providence San Francisco
In Canada: ALLIED CHEMICAL CANADA, LTD., 100 North Queen St., Toronto 14

Allied Chemical

CITROPAL® contains the identical proportions of only those components which we found to be in terpene- and sesquiterpeneless natural lemon oil.

CITROPAL® combines the full pure odor and flavor with the stability, uniformity, availability, economy and other advantages of synthetic products.

CITROPAL® is particularly recommended:

a) In compounds for Perfumes and Colognes, all Lotions, Cosmetic Products, Soaps and Detergents.

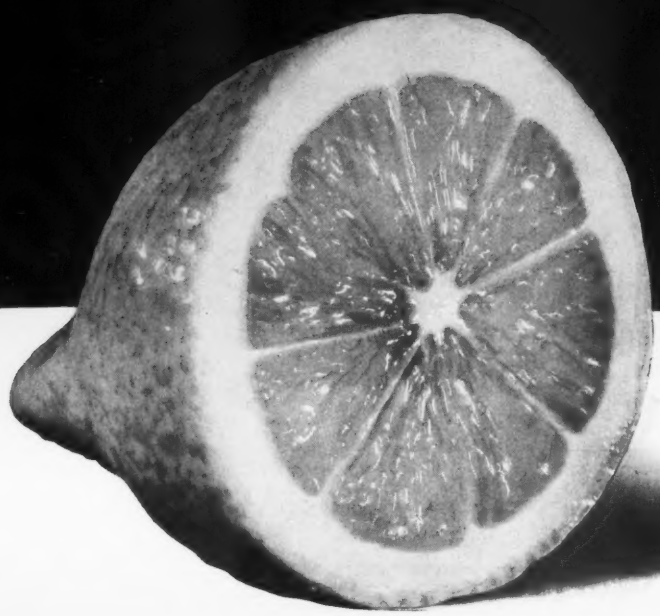
b) In the manufacture of lemon-flavors.

DRAGOCO INC.

250 West Broadway, NEW YORK 13, N.Y.
Tel. Canal 6 - 58 13 15

CITROPAL®

A PERFECT REPRODUCTION OF TERPENELESS LEMON OIL



Note further details and suggestions from our data sheet.

New Vitamin B_6 Brochure From Roche Has Expanded Text and Revised Formulae Tables

1959 EDITION NOW READY

This revised, expanded edition of the Roche vitamin B_6 brochure is of great interest to all executives in pharmaceutical manufacturing who are concerned with the preparation or sale of vitamin preparations.

Increased to 40 pages from 24, containing more than a hundred additional references, and with revised pharmaceutical formulae tables, the 1959 edition of the Roche vitamin B_6 brochure is now being distributed.

Eleven chapters cover the following important information about vitamin B_6 — History; Physiology; Biochemistry; Avitaminosis and Hypovitaminosis; Pharmacology; Clinical Considerations; Medical Antagonists; Projected Daily Maintenance Requirement and Therapeutic Dosage; Occurrence in Foods; Chemistry; and Pharmaceutical Considerations.

A series of tables give excellent resumes of the formulae of various pharmaceutical preparations—polyvitamin drops, elixirs and syrups, multivitamin tablets and capsules.

The bibliography covers 246 papers.

1959 EDITION
VITAMIN B_6
recent nutritional and clinical data with a brief review of the chronology, chemistry, pharmacy, and occurrence of the vitamin in nature

Trademark: Roche®

FREE COPIES AVAILABLE

Copies of the brochure are available without charge on request from the Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, New Jersey. In Canada: Hoffmann-La Roche Ltd., 1956 Bourdon Street, St. Laurent, Montreal 9, P. Q. *Roche Round The World:* affiliated companies in Basel, Bogotá, Bombay, Brussels, Buenos Aires, Grenzach (Baden), Havana, Istanbul, Johannesburg, London, Madrid, Mexico City, Milan, Montevideo, Paris, Rio de Janeiro, Stockholm, Sydney, Tokyo, Vienna. Agencies in other countries.

Vitamin Division, Dept. C-3
HOFFMANN-LA ROCHE INC., NUTLEY 10, NEW JERSEY

Please send me my personal copy of the Roche Vitamin B_6 brochure, 1959 edition.
Also, please send _____ copies which I will distribute to my associates.

Name_____

Company_____

City & Zone_____ **State**_____

"You and your bright ideas!"

Keeping Posted

Pfizer Facts

Pfizer's increase in sales of 7 per cent, or $13 million, which brought 1958 sales to $222 million, against $207 million for 1957, is "a significant step toward our sales goal of $260 million by 1960," Pfizer president John E. McKeen reports to the staff and supervisers of Pfizer. Earnings were up 4½ per cent to $23,965,144 from $22,908,544 in 1957. Other facts revealed in this report are:

Bringing Diabinese to market cost well over a million dollars. This product, which appears to be twice as potent as other oral therapy, and which has correspondingly less side effects, is most effective in patients over 40 years of age whose insulin needs do not fluctuate widely.

Other research centered largely around the antibiotic Tao and the glucosamine-potentiated broad-spectrum antibiotics. A third research was diversification into vaccines and biologicals.

Last year more than 85 products and dosage forms were marketed, and numerous field studies were carried out with vitamins, antibiotics, baked goods and agricultural crops.

During 1958, additional vaccine facilities were constructed at Vigo, additional organic facilities neared completion at Groton, and a wide variety of production facilities were expanded at all domestic plants.

Pfizer Laboratories Division sales were $60 million, and Roerig's sales were up 9 per cent to $14 million, making a total of $74 million in finished drug products.

Agricultural Division gained more than 5 per cent for record sales of $17 million. Sales of Terramycin Feed Supplements climbed another million dollars.

International Division sales increased for the eighth straight year to $86 million, 11 per cent over 1957. Overseas employees now total more than 7,000, including employees of over 50 different nationalities. New plants were opened in Italy, Turkey, and Mexico. Facilities were expanded in the Philippines, France, and Great Britain. Basic fermentation plants were started in Argentina and Brazil. Research plants were expanded in Great Britain and Chile, and research also got under way in India.

During 1958, approximately 60 U. S. Patents and 400 foreign patents were issued to Pfizer. Approximately 200 U. S. and 600 foreign patent applications were filed during the year. The company now has pending about 500 U. S. and over 1,700 foreign patent applications.

Pfizer Laboratories field force has been increased by 100 new detail men, for a total of 750, while the Roerig force was increased by 42 men for a total of 290. This makes an overall total of 1,040 detail men for Pfizer.

With regard to the cosmetic field, Pfizer has "promising new uses for neomycin" under study. Also sales of vitamin A increased considerably, and its use was further expanded in the cosmetic industry, where it is now an ingredient of many topical products.

Smith, Kline & French Research

Smith, Kline & French Laboratories is budgeting 1959 research at $11.5 to $12 million. In 1950 research cost the company only $1.8 million. Research will be done on vaccines for the first time, the object being "specialty vaccines." Also the company is to enter research in antibiotics, "in a modest way." President Walter A. Munns says that the phenothiazine (tranquilizer) area will not expand "too much more." He predicts about the same increases in sales and earnings for 1959 over 1958, as for 1958 over 1957.

Sales in 1958 totaled $124,062,955, against 1957 sales of $115,489,065, and 1958 earnings were $20,963,-145, against 1957 earnings of $20,552,936. Per share earnings were $4.33 against $4.24.

WITH

DISTINGUISH YOUR PRODUCTS

VAN DYK'S SCENTALLURES

SCENTALLURES,

OUR SELECTIVE
PERFUME COMPOUNDS
FOR YOUR
GLASS, AEROSOL
OR POLYETHYLENE
PACKAGED FRAGRANCES
HAIR PREPARATIONS
COSMETICS
MAKEUP
SHAMPOOS
LOTIONS
SUNTAN PREPARATIONS.

SINCE 1904
Van Dyk
BELLEVILLE, N.J.

VAN DYK

AND COMPANY, INC.
BELLEVILLE, NEW JERSEY

NEW YORK · CHICAGO · LOS ANGELES · TORONTO

Aerosol Propellant Capacity

Du Pont has let it be known that its fluorinated hydrocarbon capacity is 280 million pounds per year. Industry capacity of these chemicals is estimated at 440 million pounds a year. Other makers are: Carbide's new plant, 50 million pounds; Pennsalt, not under 50 million pounds; and General Chemical, 60 million pounds or more. The consumption this year is expected to reach not more than 200 million pounds, 90 per cent of which will be used in aerosols and refrigerants.

T.G.A. Convention Plan

The Toilet Goods Association conventions will be held alternately in New York and out of town, according to a policy recently adopted by the board of directors of the association. The 1959 convention will be held May 12, 13, 14 at the Waldorf-Astoria Hotel in New York, with the annual golf tournament, May 11 at Winged Foot in Mamaroneck, New York, and the 1960 convention will be held at the Poland Spring House, Poland, Maine, June 27, 28, 29, 1960.

PMA Clinical Research Fellowships

The Pharmaceutical Manufacturers Association has announced establishment of a second fellowship in clinical research for another two years, and has continued the original fellowship established by the American Drug Manufacturers Association in 1957 for a two-year experimental period at $7,500 per year. The purpose of the fellowships is to train qualified individuals in the techniques of clinical investigation in the hope that they will, in turn, establish such departments in educational institutions throughout the country, thereby training others in this most important area.

The first to receive the fellowship was Dr. William P. McCann, graduate of Cornell University Medical College, and research specialist in the Division of Clinical Pharmacology at Johns Hopkins University and Hospital. He is now teaching a course in clinical investigation at the University of Colorado School of Medicine. The second fellowship has been awarded to Dr. Frederick Wolff, clinical pharmacologist at the Wellcome Foundation in England. Dr. Wolff, who is coming to this country on a permanent basis, will be trained under direction of Dr. Louis C. Lasagna, associate professor of medicine at Johns Hopkins.

Loynd on the Drug Business

"As far as the public is concerned, a new miracle drug is expected every 60 days," Parke, Davis President Harry J. Loynd told the Central Section meeting of The Pharmaceutical Manufacturers Association. "Some enterprising science writer usually manages to prepare a rosy, sometimes quite imaginative, report on a miracle drug in time to accommodate this public appetite. In this industry we know there are no miracle drugs:—just better drugs. . . . Few advances in therapy do not bring with them added risk of side effects, contraindications, or a requirement for more definitive diagnosis and therapeutic caution. It is our responsibility to make certain that the medical profession and the public receive as clear a view of the hazards as of the advantages of new drugs."

With regard to the American Medical Association study of Physicians' Attitudes, Mr. Loynd expressed confusion. He referred to the survey finding that the majority of doctors interviewed said that their attitude to offers of cocktail parties, barbecues, hunting and fishing trips, and similar social affairs, was negative, at least as far as their preference for a brand of product was concerned. "In sharp contrast to this survey finding," said Mr. Loynd, "is the fact that we (Parke, Davis) have an average of at least twenty direct requests from medical groups for sponsorship of various social functions, every week of the year. As an example, here is what a responsible medical group requested: a donation to help finance Summer and Christmas parties, donations to cover corsages, table decorations, cocktails and favors."

"The sales life of a new product can hardly be estimated for more than five years," Mr. Loynd pointed out, "and competitive products can be expected to invade any new product's market in from thirty to ninety days after its initial introduction. Rapid obsolescence is the inevitable result of this frantic pace of new item production and of decreasing product or brand loyalty.

"These factors mean that we must promote new products rapidly if any reasonable sales volume is to be realized before they are superseded. But unless, in making our plans for intensive promotion, we continuously insist that only the truth be told and that only completely provable therapeutic claims be made, we are in great danger of having the medical profession, and the public interpret any exaggeration or ambiguity as fictitious claims, unjustifiable optimism, or calculated falsehoods."

"A move is on foot," said Mr. Loynd, to set up an independent medical agency to appraise new drugs for doctors willing to pay for the service. Conservative pharmaceutical manufacturers recognize that some reform is in order, and if the situation is not corrected internally, we can fully expect, and possibly deserve, the abrasive effect which an external investigative or regulatory body would apply."

Perfume Symposium

Instrumentation and the Perfumer is the title of the Fifth Annual Open Symposium of the American Society of Perfumers, Essex House, New York, April 20. Edward Shuster, chairman, announces seven papers: Introduction to Instrumentation, E. Fearns, research chemist, van Ameringen-Haebler; Aromatics and Natural Raw Materials, Dr. D. Hooker, Procter & Gamble; Raw Materials and Aromatics from the

Here's the SOLUTION

Kolar's Low Cost Midwestern Private Brand Cosmetic Manufacturing!

THIS IS ONE *of two recently purchased structures, totalling 137,000 square feet of floor space, used exclusively by Kolar Laboratories whose sole interest and business is the manufacture of private brand cosmetics and toiletries.*

IF YOU DISTRIBUTE COSMETICS OR TOILETRIES...

. . . and are seeking ways to offset rising costs and advancing freight rates, you need not undertake capital financing to build, equip and staff a new plant . . . tie up more money in fixed overhead . . . or assume added production, payroll and personnel problems. All or any part of your manufacturing and packaging (in meeting uncertain or peak load demands) can be handled more cheaply from Kolar's Midwest location.

Kolar is set up to handle a big volume of work. Its personnel know the importance of accurate process control and the need for trimming costs. They are skilled in maintaining quality and expediting production — to meet schedules on time. The whole operation, including Kolar's favorable location, offers benefits that really cannot be matched.

Centrally situated at the nation's hub of transportation, with suppliers of glass and ingredients at its very doorstep, Kolar CAN MANUFACTURE, PACKAGE AND SHIP CHEAPER. If you would like to operate more profitably, ship NORTH, SOUTH, EAST, or WEST at lower cost, and free yourself from production worries — Kolar does have the solution. Phone or write:

KOLAR LABORATORIES, INCORPORATED

1123 WEST JACKSON BLVD., CHICAGO 7, ILLINOIS • Phone: TAylor 9-2060

New England Area: 2 Pine St., Easthampton, Mass., Phone: Easthampton 1250

New York Area: 50-48 St., P. O. Box 807, Weehawken, New Jersey, Phone: Union 6-1277

Suppliers Angle, Dr. J. S. Jellinek, perfumer, Polak's Fruital Works; Instrumental Methods of Analysis and the Perfumer, V. D. Johnston, chief analytical chemist, Givaudan-Delawanna, Inc.; An Investigation into Lavandin, G. Fuller, chief perfumer, Colgate-Palmolive Company; Raw Materials and Finished Perfume Products, H. Cuttler, perfumer, Revlon, Inc.; a seventh speaker will discuss problems of instrumental analysis from management's point of view.

Dr. P. Jellinek of Pollak's Fruital Works will receive honorary membership in recognition of his contributions to perfumery.

Blatnick Committee Killed

The Blatnick Committee which held hearings last year on weight reducing remedies, dentifrices, tranquilizers, and other drug products, has been dissolved. Congressman William L. Dawson (D. Ill.) chairman of the House Government Operations Committee, has abolished four of the subcommittees. The Blatnik Committee was one of these known as the House Subcommittee on Legal and Monetary Affairs.

"White Coat" Advertising Questioned

Senator Warren G. Magnusen (D. Wash.), chairman of the Senate Commerce Committee, wants the Federal Trade Commission to investigate "white coat" advertising by drug manufacturers, and has asked the Commission to be prepared to testify before his appropriations subcommittee. He said many consumers find this type of advertising objectionable, in that it seeks to convey the impression that physicians are not only using a given product, but are, in fact, endorsing it.

Lynn Fellowship Established

An annual Fellowship honoring the late Charles Jackson Lynn has been established with the American Foundation for Pharmaceutical Education by Lilly Endowment, Inc. Mr. Lynn, who died last September at 84 years of age, was vice-president and director of Eli Lilly and Company, having been with Lilly for 63 years, and having served under every Lilly president from the founder, Colonel Eli Lilly, to today's Eugene N. Beesley.

Other memorial programs of the Foundation are: Gustavus A. Pfeiffer Memorial Postdoctoral Fellowships; Edwin Leigh Newcomb Memorial Awards; Sydnor Barksdale Penick Memorial Fellowships; E. Mead Johnson Memorial Fellowships; Charles R. Walgreen Memorial Fellowships; J. K. Lilly Memorial Fellowships; and H. A. B. Dunning Memorial Fellowships.

FDA Budget Needs

Although the amount recommended in the Federal budget for the Food and Drug Administration is up 6.9 per cent from last year—$13,210,000, or $855,000 over the current year—the rate of increase recommended by the Citizens Advisory Committee would require an increase of between 13 and 15 per cent. Enforcement of the new Food Additives Amendment will require a total of 121 additional persons in the FDA. Sixty-one of these must be provided during the current year by a supplemental appropriation, and in the coming fiscal year, provisions for an additional sixty persons must be made. If the proposed color legislation is enacted, further additional personnel would be required. No new construction money is included in the budget, and the proposed Food and Drug Administration building seems to have been abandoned.

HEW Color Legislation Ideas

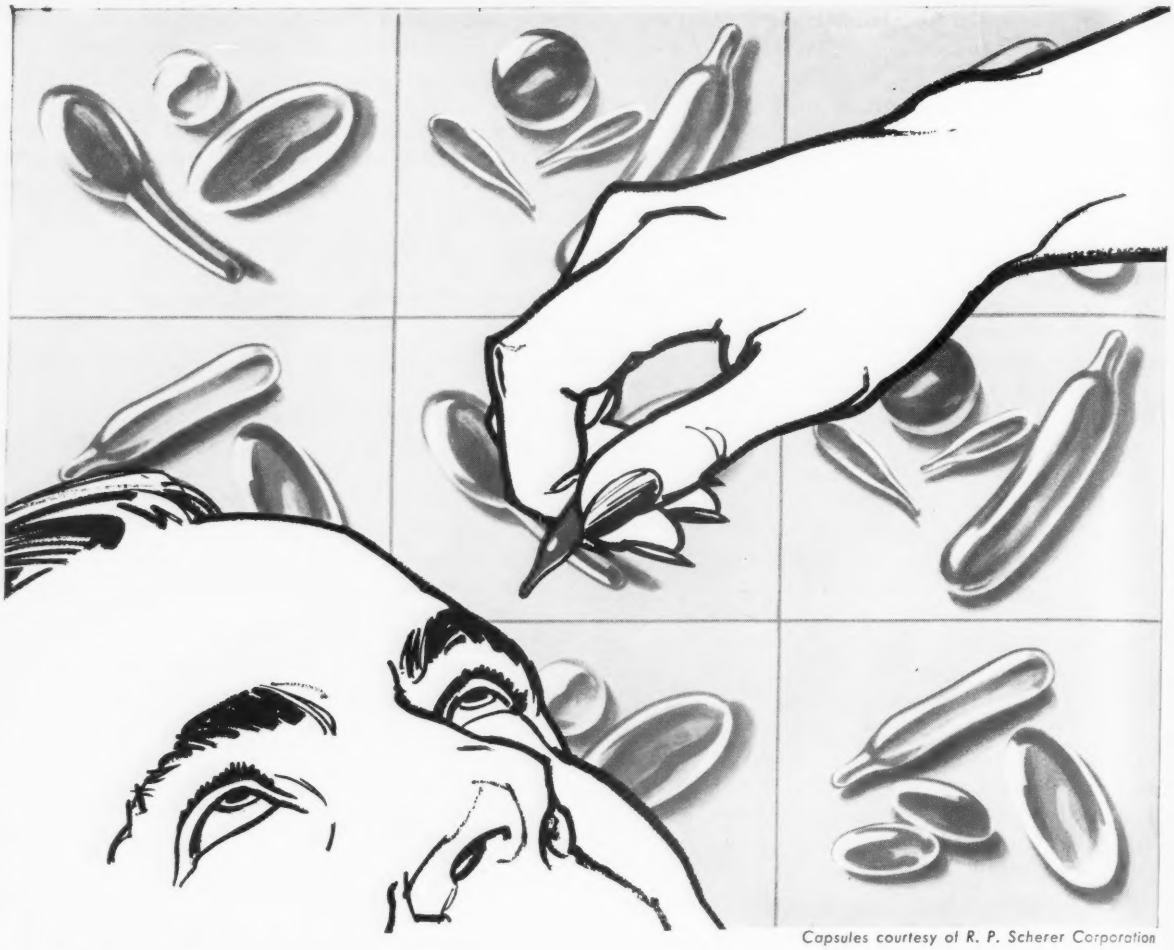
In recommending color legislation for amendment of the Food, Drug, and Cosmetic Act, the secretary of the Department of Health, Education and Welfare called for the following principles: 1.) Should apply to all colors, not only coal tar colors; 2.) It should not sanction continued use of a color simply because it was employed before the law was enacted; 3.) Before any color additive may be marketed in food, drugs, or cosmetics, its safety for such use should be established and it should be placed on a list permitted by the Government. The Government should have the right to place a limit on the amount of a color that may be used or specify the products in which it may be used, or both; 4.) Where necessary, the purity and safety of individual permitted colors will be certified by the Government before marketing, as coal tar colors are now certified. Where certification is not necessary, the FDA would have authority to exempt a color from certification requirements; 5.) It should expressly forbid the listing of a color for a use which will promote deception of the consumer or violations of the Food, Drug, and Cosmetic Act.

Chesebrough-Pond's Sells Sofskin

Sofskin, Inc. was recently formed to take over from Chesebrough-Pond's, Sofskin and Moisture Magic hand creams. Taken over from Vick Chemical Company recently when Vick disposed of its cosmetic interests, the Sofskin line proved to be in conflict with several of Pond's creams. The new company is headed by Alfred Roberts, formerly of Block Drug Co. and Revlon. Vice-president in charge of sales is George S. Carroll, formerly national sales manager for Helena Rubinstein.

HEW Secretary Pushes Fluoridation

HEW Secretary, Arthur S. Flemming recently said that it is "nothing short of tragic" that millions of children are being denied—through failure to fluoridate water supplies—"a convenient and safe way of preventing 65 per cent of dental decay." Although its effectiveness has been proven over and over again, he said and the American Dental and American Medical Associations have proved it, fewer cities are



Capsules courtesy of R. P. Scherer Corporation

For plasticity in "one-shot packages"

One-shot capsules for pharmaceuticals, foods, adhesives, oils and dozens of other products are plasticized with Glycerine. They are easy to squeeze or swallow. They remain soft and flexible under varying conditions of heat, cold and humidity.

Where capsules are for human consumption, freedom from toxicity is essential. Here again, the safety, compatibility, taste and acceptability of Glycerine are advantages difficult to match in any other plasticizer.

Glycerine is stable in price, dependable in supply. Its usefulness continues to grow. Our 18-page booklet, "Glycerine Properties and Uses," may suggest applications to you. Address your request to the Glycerine Producers' Association.

Properties

HYGROSCOPICITY • STABILITY

SOLVENT POWER • VISCOSITY

NONVOLATILITY • NONTOXICITY

TASTE • COMBINING WEIGHT

ADVANTAGES THAT COME WITH

Glycerine

Applications

HUMECTANT • CARRIER

SOLVENT • LUBRICANT

SOFTENER • EMOLLIENT

ANTI-FREEZE • ALKYD BASE

GLYCERINE PRODUCERS' ASSOCIATION • 295 MADISON AVENUE, NEW YORK 17, N. Y.

taking on fluoridation programs, and, in addition, many cities which had fluoridation programs are discontinuing them.

Between 1945 and 1950, said Secretary Flemming, the program increased steadily with fewer than 100 cities added each year. Then there was a sudden spurt to 243 cities added in 1952, and 378 in 1953, the record year. Since then the number of starts has declined. In 1958 there were only 131.

Wants More Dental Insurance

USPHS General Surgeon Leroy E. Burney has called on the dental profession to stop lagging behind in the development of insurance plans. "It is of the greatest potential significance to the oral health of this country that several state dental associations have established dental service plans," he said. He called for "rapid strides" in plans similar to prepayment and insurance plans backed by organized medicine and hospitals.

G.E. to Control Advertised Prices

Having abandoned fair trade for protecting retail prices on its products, General Electric's Housewares and Radio Receiver Division seeks to keep advertised resale prices within reason by refusing cooperative advertising allowance to those who advertise prices below the levels G.E. has in mind. For example, a steam spray iron has a suggested retail price of $21.95. The dealer can sell this iron for any price he chooses, but if he advertises it for less than $18.95 he does not get any cooperative advertising allowance on the advertisement. This could amount to as much as 75 per cent of the cost of the advertisement, and would ordinarily be 50 per cent. A G.E. official said: "Recently, there have been examples where our products have been advertised at completely unsound and uneconomic levels. While dealers have the privilege of engaging in these detrimental practices, the company is under no obligation to share in the expense of such advertising."

The amount allowed for cooperative advertising varies from one and one-half per cent to two per cent of distributors' sales. Under the present plan, if the price in the advertisement meets the requirements, G.E. will pay two-thirds and its distributor one-third of the fixed line rate agreed upon with the dealer.

We wonder what the Federal Trade Commission will think of this scheme. Perhaps the Commission might contend that the "proportionally equal terms" provision of the Robinson-Patman amendment to the Clayton Act cannot be violated for the purpose of protecting advertised prices.

Rexall Sells VCA Laboratories

Rexall Drug Company has sold VCA Laboratories to Lanolin Plus, Inc. Principal products of VCA are Rybutol, Super-Rybutol, and Juvenol, all vitamin preparations. Intracel, a penetrating analgesic, was not included in the sale and will be marketed by Tested Products Corporation, St. Louis.

However, Rexall is acquiring Chippewa Plastics, Inc., Chippewa Falls, Wisconsin. D. R. Williams, president of Chippewa says the association with Rexall will provide Chippewa with the financial resources necessary to carry out Chippewa's growth program. The acquisition is being made on the basis of one share of Rexall stock for two shares of Chippewa common stock with appropriate adjustments for Chippewa preferred stock. Williams said Chippewa Plastics will operate as an independent division under the same personnel at Chippewa Falls.

Merck Fellowship for India

The Merck Sharp & Dohme International Fellowship in Rehabilitation for a physican from India to undertake advanced training in the United States has been created by a contribution of $10,000 to the World Rehabilitation Fund by the Merck Co. Foundation. The Fellowship will provide a minimum of one year and possibly a longer period of training in physical medicine and rehabilitation for a physician from India. The Fellowship will be administered by the World Rehabilitation Fund, of which Dr. Howard A. Rusk is president, in cooperation with the International Society for the Welfare of Cripples.

Amphetamine Inhalers Restriction

The recent Food and Drug Administration action restricting amphetamine inhalers to sale on prescription only might warrant some explanation. Amphetamine, discovered by Smith, Kline & French Laboratories, and trademarked Benzadrine, is now in the public domain so far as the chemical itself is concerned. Smith, Kline & French, aware of the danger from the misuse of the Benzadrine inhalers, changed the active ingredient in these inhalers to propylhexadrine some ten years ago and changed the trademark of these inhalers to Benedrix Inhalers. These inhalers are not restricted from over-the-counter sale and may be freely bought in any of the 49 states.

However, since amphetamine is in the public domain, another company put out inhalers containing amphetamine and these have been causing trouble. It is to prevent this sort of thing that the FDA ruling was made.

Physician's Legal Brief

Not only are the manufacturers in this industry experiencing increased difficulty with suits for damages said to be caused by their products, but the medical profession is having the same trouble with malpractice suits. As a result of this, Schering Corporation has brought out a monthly four-page publication entitled The Physician's Legal Brief. The first issue, February, says: "The flood tide of malpractice suits, now running some 350 per cent above the high water mark of 1945, menaces increasing numbers of phy-

sicians. Some 5,000 are taken to court each year, but several times that number settle out of court and all physicians pay additional costs in the form of steadily rising premiums for liability insurance."

Health Care Under Social Security

Hospital and surgical insurance for life for those old enough to be drawing Social Security benefits is proposed in a bill to broaden the benefits of Social Security in that direction. Backed by the A.F.L.-C.I.O., a bill has been introduced by Representative Aime J. Forland, (D., R.I.) to carry out the proposal. Eventually, the bill would require large increases in Social Security taxes on both employees and employers. For example, a worker making more than $4,800 a year now pays $120 in Social Security taxes, and under the present law, he will be required to pay $216 a year in 1969. But under the Forland bill his taxes would rise $12 a year at once. Furthermore, by applying Social Security taxes to the first $6,000 of annual earnings, instead of the present $4,800, the bill would require workers earning $6,000 or more to pay $285 a year in Social Security taxes by 1969. The bill, which is strongly opposed by the American Medical Association, would provide up to sixty days a year of hospital care for Social Security beneficiaries, and would also pay for care in a nursing home and for surgical services.

Drug Research at $170 Million

Medical and drug research expenditures of the pharmaceutical and medicinal chemical industry reached an all-time high of $170 million in 1958, against a former high of $127 million for 1957, according to a survey conducted by the Pharmaceutical Manufacturers Association which reported that the ethical pharmaceutical industry spent about 7 per cent of its total sales on research and development last year. The industry also supported medical schools, hospitals, and similar institutions, or financed research in them to the extent of $20,560,000 for 1958. Some $190 million are said to be budgeted for medical and drug research by the industry for 1959, and this figure might be exceeded before the year is over.

Colors Delisted by FDA

FD&C Yellows No. 1, 2, 3, and 4 have been delisted by an order of the Commissioner of Food and Drugs, and have been transferred to the list of EXT. D&C colors under the names of Yellow No. 7, Yellow No. 8, Yellow No. 9, and Yellow No. 10. The order, which has been in abeyance for close to two years, was signed following the recent decision of the U. S. Supreme Court on the case involving FD&C Red No. 32, which ruled that the Food and Drug Administration has no power or authority under existing law to set tolerances for coal-tar colors. EXT. D&C colors cannot be used in the manufacture of lipsticks.

New Synthetic Narcotic

A new pain-killing drug, NIH 7519, said to be ten times as effective as morphine, and fifty times as effective as codiene, was announced last month by Arthur S. Flemming, Secretary of Health, Education, and Welfare. The drug was developed by Dr. Everette L. May of the Laboratory of Chemistry, National Institute of Arthritis and Metabolic Diseases, and Dr. Nathan B. Eddy, chief of the institute's section on analgesics. The developers say that the drug, made from coal tar derivatives and belonging to a new series of compounds called benzomorphans, has a partial structure of morphine but is much simpler than morphine. Pending patent rights have been assigned to the U. S. Government, which plans to assign foreign right to the World Health Organization. Secretary Flemming said that the drug appears to be less addicting and safer than morphine, although after extensive tests on animals, it has been administered only to something over 200 human beings in New York, Philadelphia, and Los Angeles.

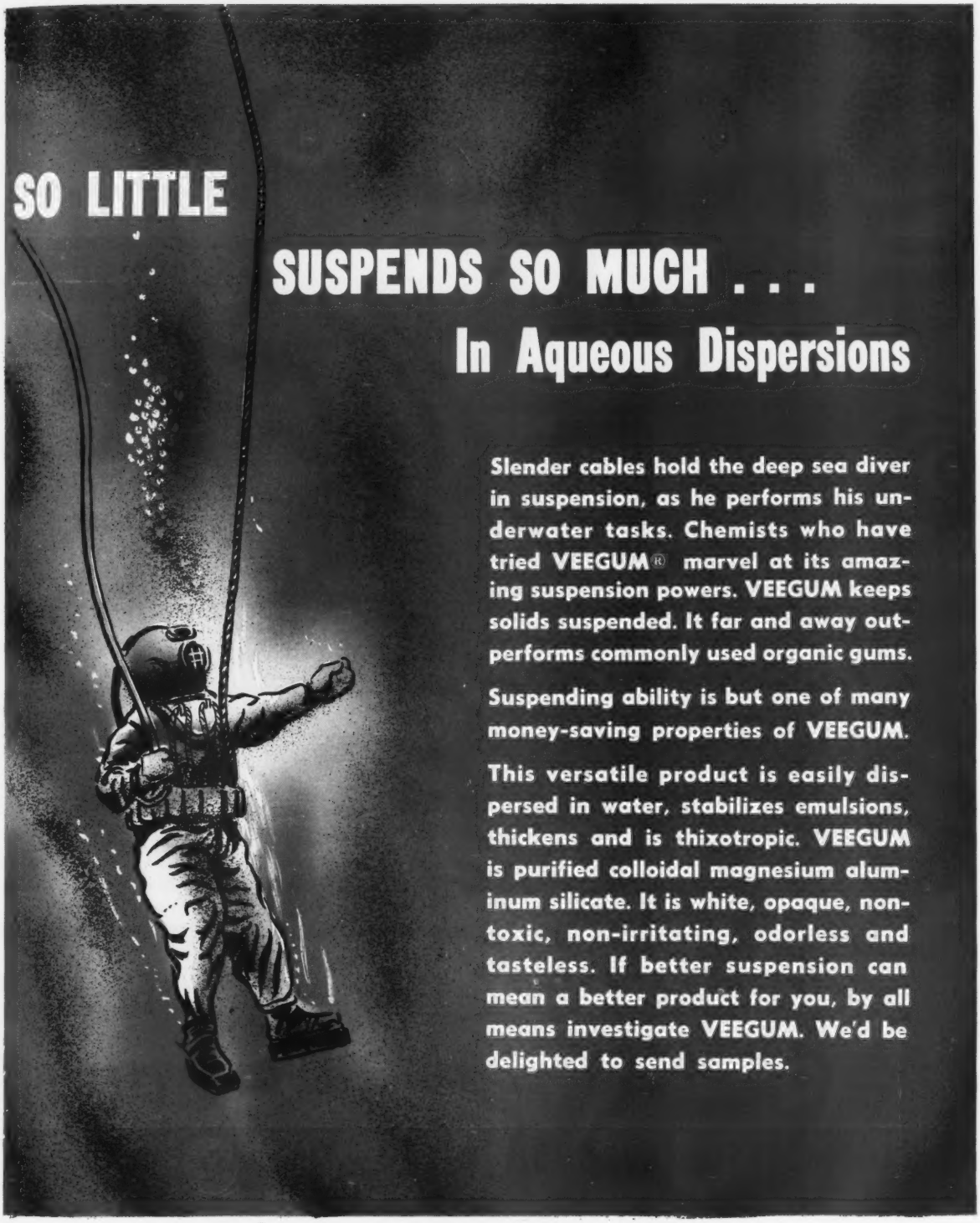
The addiction studies on monkeys were conducted at the University of Michigan, and the chronic toxicity and pain-relief trials and production of the drug were conducted by Smith, Kline, & French Laboratories.

Haitian Mental Health Trials

An experiment being undertaken in the Republic of Haiti is calculated to determine whether, in cases of mental illnesses, a drug is a more effective conditioning agent for therapy than a bed. With more than half of the hospital beds in the United States occupied by mental patients, this experiment is of extreme interest to this country. Dr. Nathan S. Kline, of Rockland State Hospital, Orangeberg, N. Y., is cooperating with the Haitian government in a clinical substitution of tranquilizers for hospitalization in treating Haiti's six to nine thousand mentally ill. The drugs are being made available by U. S. pharmaceutical manufacturers.

The experiment is the result of findings from similar experiments in mental hospitals in this country. It is hoped that the mentally disturbed patient can be treated in the out-patient clinic, meanwhile remaining a member of the community, saving the government millions in hospital care. Dr. Kline points out that a 1,000-bed hospital costs $15,000,000, alongside of which the cost of tranquilizing drugs is infinitesimal.

The project is being conducted under the auspices of MEDICO (Medical International Cooperation), the Haitian Government, and the Department of Mental Hygiene of the State of New York. Dr. Louis Mars, noted psychiatrist and Haitain Minister of Foreign Affairs, will direct the project, and Dr. Kline will serve as consultant. Construction funds and necessary pharmaceuticals are being furnished by Hoffmann-La Roche, Schering Corporation, and Wyeth International.


SO LITTLE
SUSPENDS SO MUCH . . .
In Aqueous Dispersions
Slender cables hold the deep sea diver in suspension, as he performs his underwater tasks. Chemists who have tried VEEGUM® marvel at its amazing suspension powers. VEEGUM keeps solids suspended. It far and away outperforms commonly used organic gums.
Suspending ability is but one of many money-saving properties of VEEGUM.
This versatile product is easily dispersed in water, stabilizes emulsions, thickens and is thixotropic. VEEGUM is purified colloidal magnesium aluminum silicate. It is white, opaque, nontoxic, non-irritating, odorless and tasteless. If better suspension can mean a better product for you, by all means investigate VEEGUM. We'd be delighted to send samples.

Use This Coupon To Get Fast Action

R. T. VANDERBILT CO., SPECIALTIES DEPARTMENT
230 PARK AVENUE, NEW YORK 17, N. Y.

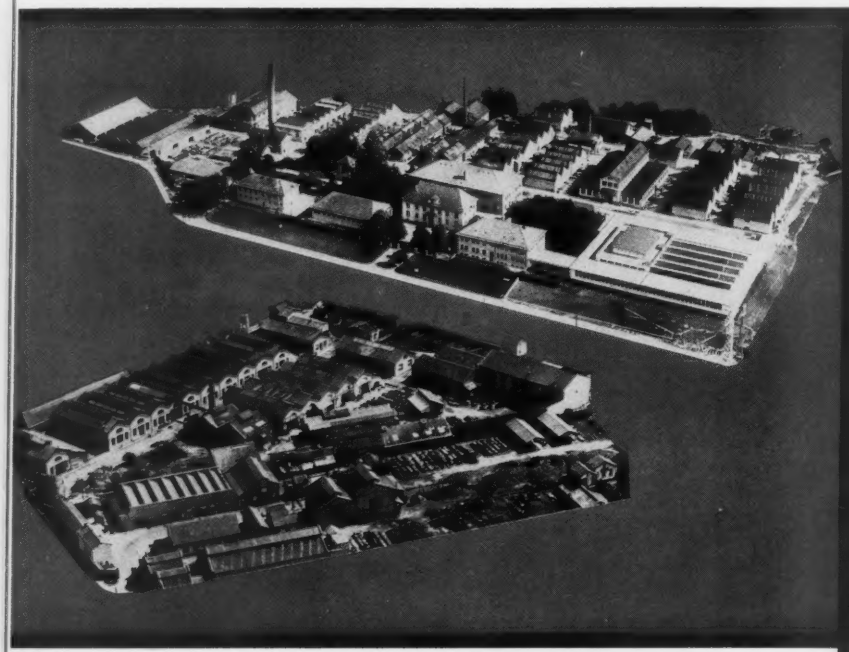
( ) Please send VEEGUM Bulletin 53J ( ) Send sample of VEEGUM
State Application_____

Name_____

Title_____

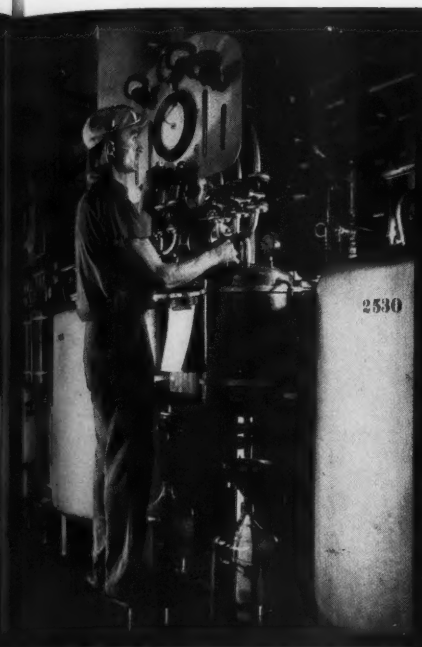
(Please attach coupon to your Company letterhead) P–4

How Givaudan's creative imagination enhances your perfuming skills



Through our associates in Geneva and Paris, L. Givaudan & Cie., you are kept informed of artistic trends and developments in the sophisticated world of fragrance on the European continent.

The skill and ingenuity of Givaudan perfumers, demonstrated in creations recognized throughout the world for their originality and success, are always available to Givaudan customers.



As the world's largest producer of perfume chemicals, Givaudan has developed facilities and techniques that permit volume production under rigid quality control.

Givaudan offers you the widest variety of aromatic materials from a single source. You have the security of a continued supply and uniform quality.

For custom-made fragrances to fit your specific needs, Givaudan offers the cooperation of its perfumers, all top rank in creative skill and imagination.

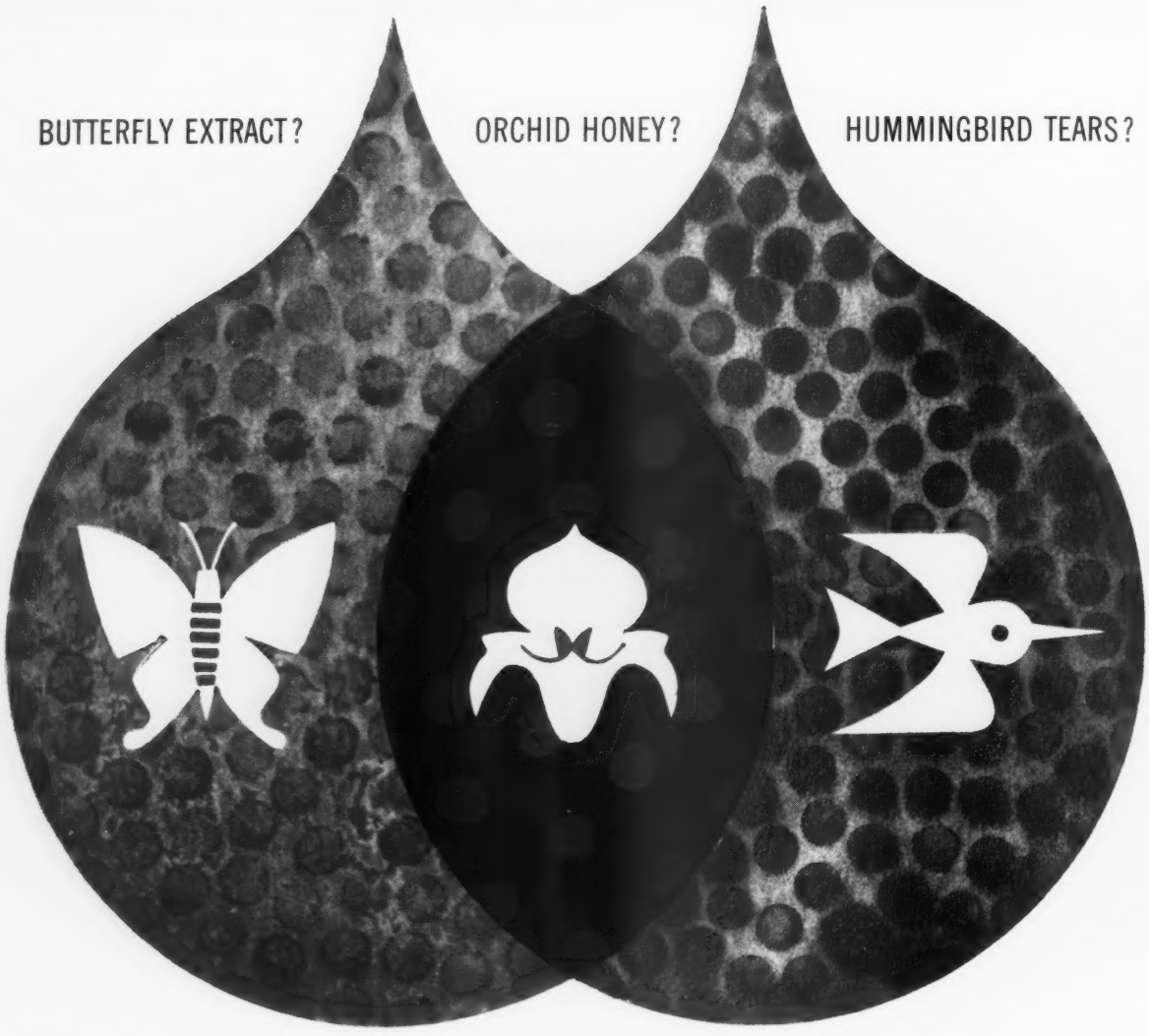
Creative imagination, backed by modern facilities, is one of the many special benefits Givaudan offers its customers.

GIVAUDAN

Better perfume materials through constant research and creative ability

GIVAUDAN-DELAWANNA, INC.

321 West 44th Street • New York 36, N.Y.



YOU COULD PROBABLY EMULSIFY THEM WITH THE ATLAS "32" LINE!

Whether your ingredients are as fanciful and exotic as these, or more standard items . . . whether you want to emulsify oil in water or water in oil . . . your problems are greatly simplified by the Atlas "32" line of emulsifiers. No need to experiment with thousands of surfactants—these 32 quality products are pre-selected because they can handle practically any emulsification problem of the cosmetic industry. And the famous Atlas HLB system helps you narrow your choice quickly. Write us—tell us what you want to emulsify and how—and we'll assist you with advice and samples.

Chemicals Division
ATLAS POWDER COMPANY
Wilmington 99, Delaware

PRODUCT LIABILITY WITHOUT FAULT

Some problems and proposals*

BY EVERETT I. WILLIS
DEWEY, BALLANTINE, BUSHBY, PALMER & WOOD

The subject of product liability is receiving particular attention in the drug industry at the moment, largely because of the recent Cutter polio vaccine cases. There, a California jury brought in a specific finding that Cutter Laboratories had not been negligent in the preparation of its vaccine, but nevertheless awarded substantial damages to two plaintiffs on the theory of implied warranty.

There is no doubt that the risks of product liability are infinitely greater than they were 25 years ago. The risks have increased only partly as a result of changes in the law. The law has changed, is changing still, but the really significant development has been the enormous advance in research, manufacture and distribution methods which has made available unprecedented numbers of new products to unprecedented numbers of people in the fight against disease. These technological advances have not only multiplied fantastically the number of new medical drugs, but also have made these new products available to the public with unprecedented speed.

The result has been, in effect, a revolution in the American drug industry based upon scientific achievements unsurpassed by any other industry in our highly scientific age. At the same time these very advances in drug technology and marketing have brought with them increased risks in the field of product liability. Thus the American drug industry is in danger of becoming the victim of its own excellence.

The Cutter cases have attracted wide attention because they illustrate in a rather breathtaking way the enormous risks inherent in the manufacture and sale of modern medicines. In that respect the outcome was startling from a businessman's point of view, and perhaps even more so from an insurance man's point of view. But despite the contrary impression conveyed by some press reports, the legal issues involved are not novel. Strict liability in implied warranty has been the rule in a majority of states for many years. Moreover, California had abandoned the requirement of privity of contract in actions for breach of warranty in food cases years ago. Thus, from a lawyer's point of view, the legal theory on which the cases were decided is not particularly shocking.

The recognition that sellers of products for human

*Somewhat abridged, with references omitted, from an address before the National Drug Trade Conference, December 1958.

consumption have a special responsibility for the safety of their goods goes back at least four centuries in the English common law. In this country liability without proof of actual negligence has been imposed on producers and purveyors of human food products in cases going back more than 100 years. One legal path to this end, within the traditional common law tort framework, is the doctrine of *res ipsa loquitur*. This means, in product liability cases, that if a product causes an injury which would not ordinarily have occurred had the product been manufactured with due care, that fact alone is prima-facie evidence that the accident was caused by the manufacturer's negligence. In other words, the doctrine has the effect of shifting to the defendant the heavy burden of convincing the jury that he exercised due care.

The principal legal theory that imposes liability without fault on drug manufacturers, wholesalers and retailers is that of implied warranty. This concept, which had its origins in the common law, is found today in the sales acts in force in most states. These acts impose two kinds of implied warranties that are pertinent to this discussion: a warranty of fitness for a particular purpose and a warranty of merchantability. Where a product is manufactured and sold for human consumption, both these warranties are broken if the product is, in fact, unfit for human consumption. Thus in the Cutter cases the trial judge instructed the jury that both the warranty of fitness and the warranty of merchantability were involved. The result is that the sales acts themselves impose strict liability on manufacturers and distributors of food and drug products wherever injury is caused.

Thus far, I have been speaking of strict liability, that is, liability for personal injuries without regard to actual negligence. I have tried to point out, moreover, that strict liability in food and drug cases has been the general rule for quite some time. However, a noticeable change in the law, a change which is taking place right now, is in the increasing disposition of courts to impose *direct* liability on manufacturers whose products cause personal injuries. I refer, of course, to the marked decline in adherence to the rule of privity. Where the privity rule is still respected, for instance in New York, an action in warranty can be brought only against the plaintiff's immediate vendor. Where the action is based on an implied warranty, the defendant vendor, in most cases the retailer, can bring an action over against his vendor, the wholesaler, who can in turn recover from his vendor, the manufacturer. The point to notice is that in a case involving an injury resulting from consumption of a drug product, the manufacturer would always, in theory, be *strictly* liable in warranty, but only indirectly, that is, as the ultimate link in the privity chain.

Although privity is still a requirement in some states in all warranty actions, it has not been required in several states for the past three decades at least where food products are concerned. The requirement that there be contractual, or "privity," relationship between the injured consumer and the defendant crumbled first in the food area. Once this was gone, the way was open for the injured consumer to sue the manufacturer of the product directly. That the exception to the privity requirement should be extended from the food to the drug field is not surprising, considering that both products affect the human body.

The current decline in adherence to the rule of privity in warranty actions repeats the history of what amounted to a privity requirement in the law of negligence. There the requirement of privity was first abolished in cases of injuries resulting from "inherently dangerous" products such as drugs, explosives, food, drink and firearms. This category was gradually expanded, until it extended to all articles which would be dangerous if negligently made.

I need hardly point out that the progressive decline of privity as a requirement in warranty actions lifts some of the burdens of product liability from drug wholesalers and retailers. On the other hand, I cannot encourage wholesale and retail druggists to suppose that, in the absence of a privity requirement, they can wash their hands of the whole problem and leave it to the manufacturers.

For one thing, the abandonment of privity permits actions by persons who could not previously sue in warranty at all. Warranty actions thus become available to injured consumers of drug products who previously would have had to make a case in negligence. And while these plaintiffs *may* bring a drug warranty action against the manufacturer of the product, there is no certainty that they will do so in any particular case. It may be simpler to move against a financially responsible retailer or wholesaler, particularly where such a retailer or wholesaler can be served within the jurisdiction of a local court.

In summary, the liability which the law imposes today on the manufacturers, wholesalers and retailers of drug products is no stricter than it was a quarter of a century ago. That liability is becoming broader, however, in the sense of extending to a larger class of people, through the abolition of the privity requirement. Moreover, juries seem to be getting increasingly lavish in their awards.

Developments in the industry itself have also made product liability a more and more serious problem. A quarter of a century ago the number of new products developed annually was nowhere near what it is today. Nor were there facilities for bringing new medicinal drugs into quick and wide public distribution. It used to be that drug manufacturers produced, for the most part, remedies which had stood the test of years of experience. Under those conditions, it is easy to see that in the infrequent cases where an in-

WIDE WORLD PHOTO

jury resulted, there was likely to have been some error in the process of manufacture. That meant that plaintiffs were generally able to make out a case of actual negligence, and did not need to rely very often on the concept of liability without fault.

At the same time, when a new product was put on the market, it was likely to be some years before it achieved very wide acceptance among the medical profession and consumers generally, so that there was an opportunity to iron out any difficulties in production and testing methods, and to discover any unforeseen side effects while the number of people who might possibly be injured was relatively limited. Generally speaking, therefore, the danger of product liability in the drug industry, viewed as an insurance risk, was at least finite.

For contrast, consider the industry's situation today. Since World War II the industry has probably made more novel contributions to the fight against disease than were made in the preceding 50 years. One pharmaceutical manufacturer reports that almost half its sales volume last year was in products introduced within the preceding five years. Production and distribution methods have also been expanded, so that a new product can be widely available within a matter of months after its discovery.

These developments have resulted in vastly increased risks of product liability. More new products are available to more people more quickly. Consequently, when injuries result from unforeseen side effects, there is a possibility that the number of claims may be very substantial by the time the effect becomes known.

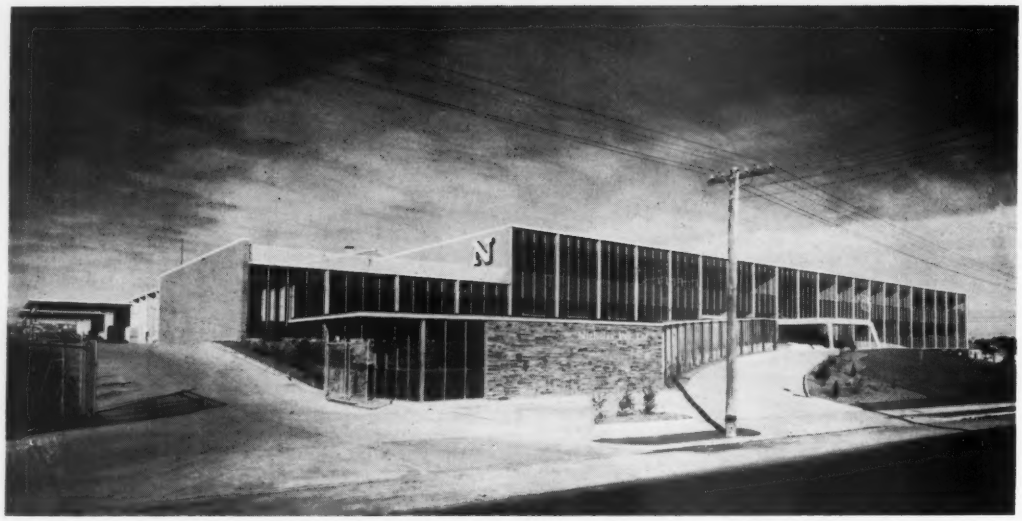
Similarly, many of the new products coming onto the market involve manufacturing and testing techniques of incredible complexity. They are constantly subject to change and improvement as chemical and biological research pushes back the borders of the unknown. However, to withhold the benefit of new discoveries from the public over years of precautionary testing would certainly be no service to society.

Take the Salk vaccine story as a concrete example. The testing methods used by Cutter in 1955 were deemed adequate by all the authorities on the subject at that time. Other procedures have been developed since. However, no one could deny that the public benefit of making polio vaccine available for inoculating children during that summer of 1955 vastly outweighed the injuries which occurred. Had it not been for the vaccine, the number of children stricken with polio during that and later years would have been infinitely greater.

Thus, there is a tremendous social advantage—I believe it could be called a public policy—in having new medical discoveries widely available with the least possible delay. The problem facing the industry, then, is how to continue its present progress and public service without exposing itself to the risk of ruinous product liability.

The first device that comes to mind for protecting manufacturers and distributors in this respect is the familiar one of product liability insurance. Insurance of that kind has come to be generally relied on throughout the industry; and, so far as I am aware, has proved, on the whole, satisfactory in the past.

(*Continued on page 372*)



Front facade of the newly completed Nicholas Pty. Ltd. plant in Australia.

MODERN ASPRO-NICHOLAS PLANTS

BY FRANCIS CHILSON INDUSTRIAL CONSULTANT

This is the story of a vital young pharmaceutical company, which is forging ahead in the international field with phenomenal speed, and of the two new recently completed factories that embody design and layout principles long advocated by the writer. To give you a quick idea of the size of this progressive company, let me give you the size of these two new factories. The Australian factory is 197,000 square feet and the English factory is 250,000 square feet. These factories are big even by American standards. But before describing these outstanding factories I would like to give you a brief outline of the history of the company.

It started in a waterfront drugstore in Melbourne, Australia, in 1915. Up to that time Australia was supplied with aspirin by the German Bayer Company. World War I cut off German supplies of aspirin and, as there was no other source of supply, the Australian government offered a prize of £ A 30,000 to any chemist who could discover how to make aspirin. The prize was won by G. R. Nicholas, and he and his brother, the late A. M. Nicholas, set about establishing a company to make acetylsalicylic acid and tablet it under the trade mark Aspro. From the start the business burgeoned and eventually it spread from Australia to New Zealand, to India, China, Japan, the Dutch Netherlands, South Africa, Egypt and the Near East, Europe outside the Iron Curtain countries, England, Ireland and Canada. The company operates a half dozen major plants and approximately a dozen small ones (20 or 30 thousand square feet each) in as many countries. In each country the company operates under a different name. The mother company in Australia is known as Nicholas Pty. Ltd.; in England it is known as Aspro-Nicholas Ltd.; in France it is known as Nicholas Freres, S.A. Each company has its own operating officials and its own board on which usually local nationals are represented. All boards are controlled by a governing board of directors. All the companies are family-owned virtually in the entirety, excepting in those countries where the law made it mandatory to issue a certain amount of stock for local sale.

One of the remarkable things about this young company is that its governing directors and operating officials are such young men. On all the boards throughout the world, I doubt if there are a dozen directors who have passed 55 years of age. Maurice Nicholas, the international chairman, is 40 years old and Hilton Nicholas, his cousin, is in his late thirties. In this young, fast-moving organization no one is allowed to hold a responsible post until he becomes senile—as is so often the case in many American companies. When a man has demonstrably begun to slip and no

longer can maintain the fast pace of the organization, he is retired with generous pension or, in lieu of that, a generous cash settlement. Barnacles or dead-heads are not allowed to accumulate until they are in their dotage. This policy accounts I think for the rapid growth of the company. Parenthetically I might also point out that, as a matter of international policy, the company always pays higher hourly rates to ordinary employees and higher salaries to executives and officials than local scales. With the exception of a few specialists in law, finance or local politics, all directors are operating executives. Thus the director of marketing, for example, is also a board member of the local company. Another interesting point is that every director of each particular company is expected to know enough about the operation of the entire business to be able to act with authority in any phase of the business should his colleague in charge of another division be absent from headquarters. This is considered necessary in a company where each director has rather far-flung responsibilities and must travel extensively. Yet, so close is internal coordination that they do not seem to get their wires crossed.

When I first went to Australia in 1946 to inspect plant sites for the company, I learned and was impressed by the fact that, although the revolution was still in progress in Indonesia, one of the company officials had just visited Sukarno, the rebel leader, and had made a contract with him to build at once a factory in what was then known as Batavia. As part of the contract he agreed to employ Indonesians entirely with the exception of management and scientific personnel. Not knowing at that time whether the Dutch or the Indonesians would win the war, he made exactly the same contract with Von Mook the Dutch governor! With the dual contracts in his pocket, he bought land, hired an architect and a builder and the company proceeded to build a factory before the shooting ended. As a condition of the contract with both leaders, the company received an absolute monopoly to manufacture aspirin products for 50 years —a tidy prospect in a nation of 70 million people. When some years later I visited Batavia or Jakarta, as it is now known, I was surprised to find competitive aspirin products on the market. Upon returning to London, I asked Maurice Nicholas why he had not excercised his rights under the monopoly. His answer was that monopolies never pay and all he had wanted was a head start on competition. He got that all right and, when the competition came back after the shooting stopped, it was found that Aspro dominated the market. And how!

In 1925 when Aspro invaded England, the Bayer Company supplied 85 per cent of the English home market. The position today is almost exactly reversed. Aspro dominates the English market overwhelmingly, in spite of the fact that it is a premium-priced aspirin and in spite of socialized medicine. The new English plant of the company produces considerably in excess of 6,000 pounds of Aspro tablets daily!

But aspirin or Aspro is not the only product produced by the company. As a matter of fact the proprietary phase of its business is rapidly becoming a minor phase of the company's total. In Australia, the veterinary products division of the company is larger than all other phases combined.

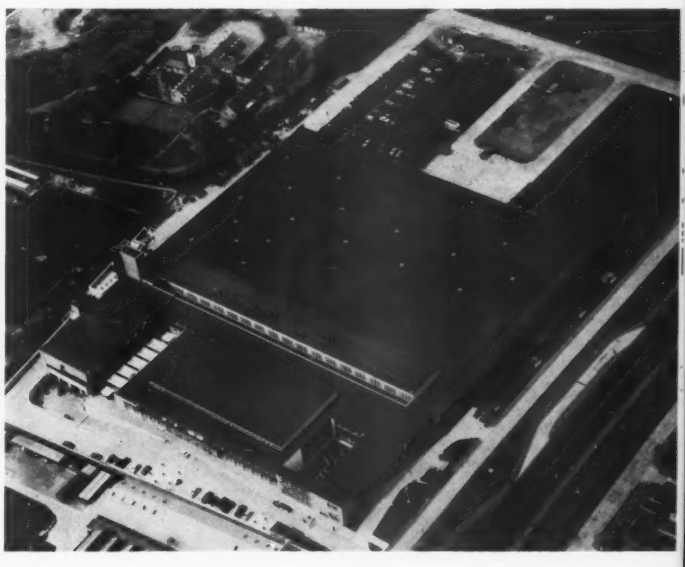
The Nicholas companies make proprietary products, ethical products, veterinary products, household chemicals, bulk vitamins, feed supplements and other products. And the company owns outright Ivers-Lee International, excepting in the Western Hemisphere. The latter is a post World War II acquisition. Ever since the early thirties the company had sold Aspro in Sanitape, packaging it in folding cartons. It is the largest operator of Sanitape machines in the world. The color and design of the Aspro packages are standard throughout the world. The company introduced Sanitape and Sealtite packages to Europe. After a hard, costly struggle lasting several years, these packages at length became popular and the current scale of operations may be indicated by the fact that the Ivers-Lee Ltd. division alone employs about 300 people. It is because of the needs of these several divisions of the Nicholas business that it was necessary to make the Australian and English plants so large.

Before describing these plants let me make a statement which, since I have seen all the large-scale tablet plants in America, I am sure cannot be challenged successfully: the Aspro plants in England and Australia are the most efficient and cleanest tablet plants in the world.

Let me make a further statement: unlike the majority of American and English companies, the Nicholas interests do not denigrate production; they fully appreciate its importance and will not hesitate to scrap a plant once its inefficiency has become ap-

(*Continued on page 376*)

Air view of the Aspro-Nicholas Ltd. plant in England.



ANIONIC SURFACE ACTIVE AGENTS IN COSMETICS*

BY J. M. LONGFELLOW COLGATE-PALMOLIVE COMPANY

The consumption of cosmetics and toiletries is reported to have increased thirtyfold in the United States within the space of the less than two generations since the initiation of the first World War.[1] Technical advances which have led to improved products and to new products have contributed to this market growth, but the major part of the growth must be attributed to changes in the economic and social patterns of American life. These latter changes have resulted in increased numbers of the American people being aware of the importance of cleanliness and grooming and increased numbers having greater disposable incomes a part of which can be allocated to the purchase of grooming requisites.[2]

The Toilet Goods Association estimated[1] that in 1957 total sales of perfumes, cosmetics, and other toilet preparations, excluding toilet soap, reached a record high of $1,430,700,000. The *Drug Topics*[3] annual survey of total civilian spending for goods in the TGA category just cited totalled $1,640,230,000; their estimate for toilet soaps was $218,960,000 and for deodorant soaps $57,390,000. For the personal products we are here considering, then, *Drug Topics* estimated that 1957 civilian spending totalled $1,916,580,000, and we may note that toothpastes ($202,340,000) and shampoos ($146,680,000 with the soaps mentioned above totalled $625,370,000. These three categories thus accounted for almost one-third of the sales in a market that was reported under about 50 categories by that publication.

The manufacturers of toiletries, then, represent today a considerable market, and one attractive enough to warrant some consideration on the part of the purveyor of surfactants. Pacifico and Ionescu[4] expressed the surprise industrial chemists are apt to experience at noting the amount of surfactants used in cosmetics. These authors estimated that, in 1955, 18 million pounds of surfactants (on a "100 per cent active" basis) were used in cosmetics and pharmaceuticals. Of this amount, only slightly less than half was made up of anionic surface active agents.

What, then, have been the problems in the application of anionic surfactants to toiletry products, and what progress has been made in their solution? In the decades immediately past, cosmetic chemists have applied themselves unremittingly to the replacement of formulation art by formulation science. Important progress has been made, and much of it has resulted

*Presented at the 45th Annual Meeting of the Chemical Specialties Manufacturers Association, Inc., December 1958.

from efforts to modernize toiletry formulations to incorporate the advantages made available through synthetic surfactants. However, the problems of formulating toiletries and, particularly, of evaluating them for stability and for performance, remain difficult, and are certainly not yet subject to completely scientific treatment. In these circumstances, it is much easier to see where we are going than to specify exactly where we are. It is, however, my purpose to make an assay of where we stand today, which I attempt knowing full well that our rapidly onrushing cosmetic science is not really standing at all.

General Requirements

The selection of a surfactant for a specific application in toiletry formulation entails considerations of price and suitability to the purpose analagous to those encountered in any application. There are areas that merit special emphasis, however. That we do not place price, physical form and chemical stability in the group especially emphasized for cosmetics does not imply that these factors are not very important in cosmetic applications, for indeed they are, but only that these factors are considered in their complex interplay with the other attributes of the surfactant in much the same way by the toiletries formulator as they are by the scientist who uses them in any other application.

The "esthetic" properties, such as color, odor, and taste of a surfactant are very important in toiletry applications. That the color and odor as well as taste of a toilet article have a great deal to do with the consumer's acceptance of that article is certainly well known and, hence, it is obvious that a cosmetic chemist will not accept, if he has the choice, a limitation imposed by a surfactant ingredient on the color, taste or fragrance of his final product. It is less well known that the "esthetic carryover" in subjective evaluation of other properties of cosmetic compositions is so strong that their evaluation is at least suspect and often almost worthless if the color, odor or taste is either well liked or much disliked. This means, among other things, that attempts to evaluate discolored or malodorous surfactant samples to determine whether a "cleaned up" specimen of the same surfactant would be useful in toiletries are of almost no value.

The toxicology of any material used industrially and used in preparations meant for use on the consumer's person is certainly of grave importance, and the cosmetic chemist is very much concerned with this aspect of his science. As *Chemical Week* recently noted,[5] suppliers of ingredients to all of the formulation industries are coming to realize that the availability of readily available and reasonably complete toxicological data on their products results in prior consideration by the potential user, who prefers to evaluate first those possible ingredients whose toxicological properties are known to him.

In toiletries, the toxicology data of primary importance are those concerned with ingestion, contact with the skin and contact with the eye; it may be noted that inhalation data is rapidly becoming of very great importance, as well.

Ingestion toxicity is a topic of such widespread interest that it scarcely warrants being noted in connection with toiletries as distinct from consumer and industrial products in general. The problems of interpretation and application of laboratory data are indeed complex, but this is true in every field in which such data is used.

Skin contact phenomena are of more direct interest in the field of toiletries, and testing of materials for skin damage has elicited a number of investigations that have been particularly well discussed in recent publications by Gotte and coworkers,[6] and by Stupel and Szakall.[7] In practice, the use of patch tests on human subjects, after preliminary animal testing, is generally used to predict the incidence of irritation or of contact allergic eczematous response. While patch tests are indispensable in present practice, they are not completely reliable in predicting the reactions which will be encountered under use conditions, and much further study is needed in this area.

Eye-contact testing is currently performed by employing the rabbit's eye by the technique of Draize, Woodard, and Calvery,[8] slightly modified in some instances. While this technique leaves some opportunity for criticism in extrapolating its results to humans, it is possible to obtain technically reliable and reproducible data with the method, and it will undoubtedly be maintained in the armamentarium of safety testing for many years before a superior technique will be found.

In recent years, the realization that inhalation represents another and important route whereby substances in toiletries may enter the body has been more and more widely discerned. In this important area, however, there has been as yet only a preliminary exploration of the hazard, and we have not developed techniques widely accepted as valid to estimate the hazard of specific toiletries materials. In-

(*Continued on page 379*)

COURTESY GERMAINE MONTEIL

TAILOR-MADE STEROIDS*

BY FRANCIS C. BROWN SCHERING CORPORATION

Steroids gave Schering Corporation both its initial prominence and later dramatic growth, and we are allocating more than 30 per cent of our 1959 research budget of over 7.5 million dollars to the search for active new steroids.

Nature's steroids, probably more than any other product of the body's complex production system, influence the kind of person one is. They lie close to the hidden mystery of life itself, for our reproductive organs are completely under their influence, and our ability to cope with stress, to combat infections and to maintain the mineral balance essential to life are also governed by our body's steroids. For these reasons, the synthetic steroids have always held a particular fascination for most people.

Let us take a look at the share of the total pharmaceutical market which steroids hold in the United States (Figure 1).

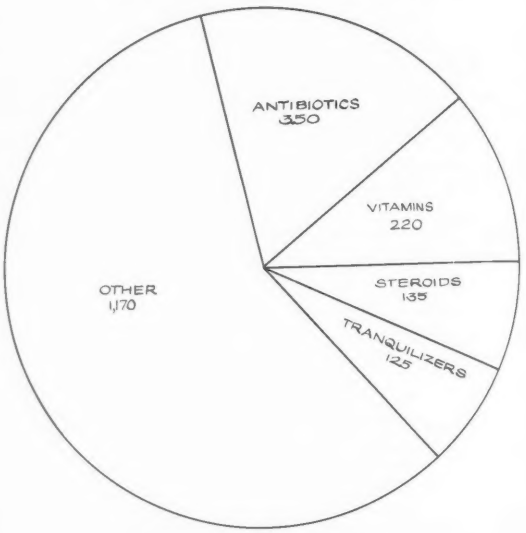
The steroid share of the pharmaceutical market is exceeded only by vitamins and antibiotics. The pharmaceutical market for steroids breaks down into three segments, as shown in Figure 2, and the largest segment is occupied by the cortical steroid group. The corticosteroid market has expanded considerably since the introduction of cortisone, as can be seen in Figure 3.

Viewing the cortical steroid market over the last five years, we note the largest jump occurring in 1955 and 1956. This was due to the discovery of prednisone and prednisolone by Schering, and its subsequent commercial introduction by Schering and its licensees.

Steroids for medicinal use can be divided into two classes, those that are hormones or have hormone-like action, and those that are not. In the animal body there are glands that produce substances which stimulate or regulate body action. Some of these are connected by ducts or tubes directly to the appropriate areas of action. There are others glands which send their substances via the blood stream to the specific organs they control or into the mysterious regulatory mechanisms of the whole body. These glands are called ductless or endocrine glands, and their secretions are called hormones. The products of some of these glands are hormones which are non-steroidal or protein, as for example the hormones of the pituitary and the thyroid. On the other hand, the adrenal glands produce both steroid hormones and the non-steroid hormone known as epinephrine which, among other things, influences heart action and blood pressure. Then there are the sex glands, which produce only steroid hormones. The sex hormones are produced in the testes of the male and in the ovaries of the female. The sex glands act under the influence of the pituitary hormones, and the products of the sex glands in turn influence the pituitary. Thus, the elements of this glandular group are to a large extent mutually interdependent; any functional disorder in either is almost certain to cause a disorder of the other. The sex hormones play a profound role in the development from childhood into adulthood.

FIGURE 1

ESTIMATED ETHICAL DRUG SALES IN THE UNITED STATES IN 1958 AT THE MANUFACTURER'S LEVEL IN $MILLION.



TOTAL MARKET IS $2 BILLION.

In the female two steroid hormones are produced in the ovary. One of them, estrogen, causes the expulsion of the ovum or egg, which erupts from the surface of the ovary and is carried through the fallopian tubes into the uterus.

After the follicle erupts, the crater from which it springs becomes transformed into a body known as the corpus luteum. This contains the sex hormone "progesterone" which has the primary function of preparing the uterus to support the fertilized ovum and embryo. These two hormones are produced successively in alternating cycles—the estrogenic hormone during the early part of the menstrual cycle and the progestational hormone during the latter part

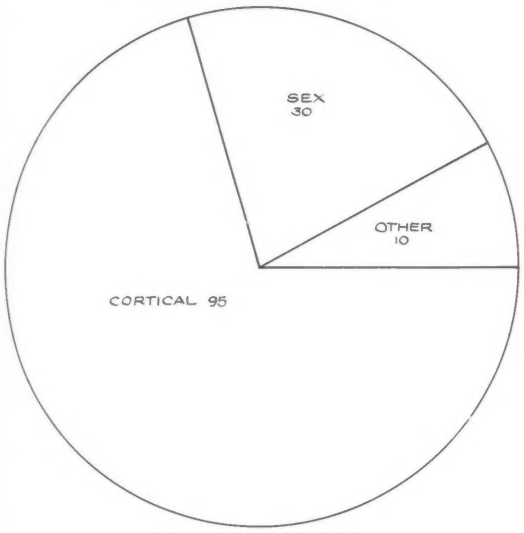
*From a paper presented at the Investment Analysts Society Mid-West Forum, January 1959, Chicago, Ill.

immediately before and during menstruation.

However, if the female becomes pregnant, the menstrual cycle is interrupted and the placenta to which the growing embryo is attached takes over the major job of producing progesterone, as this hormone is necessary to keep the uterus quiescent during the growth period, thereby preventing contractions followed by "spontaneous" abortion, that is, loss of the embryo.

FIGURE 2

ESTIMATED ANNUAL STEROID DRUG SALES IN THE UNITED STATES IN 1958 AT THE MANUFACTURER'S LEVEL IN $ MILLION.



TOTAL MARKET IS $135 MILLION.

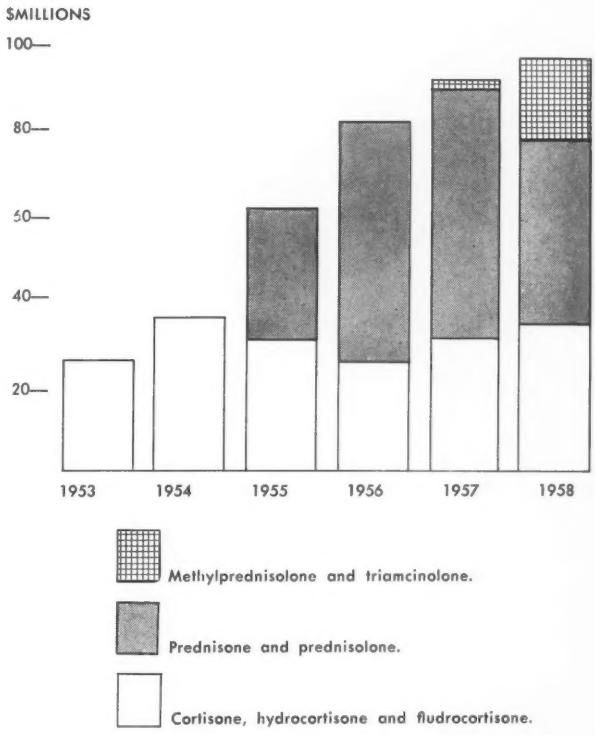
In addition to regulating conception, the estrogenic hormone influences the secondary sex characteristics of a woman, such as the maturing and general healthy tone of her sex organs, her breast development, the pattern of bodily hair and the fat distribution which causes a woman's thighs and shoulders to be more rounded and less muscular than that of a normal man.

While sex hormones are necessary to the creation of life, they are not essential to its maintenance. Still, they may be said to be basic to one's happiness. On the other hand, certain hormones of the adrenal glands are indeed essential to life, as well as to normal health. The adrenal glands are attached to the renals or kidneys and, along with the hypothalamus and pituitary glands, play a vital role in the regulation of body metabolism. The covering or cortex of the adrenals produces essential hormones known as cortical hormones which are all probably steroids. These hormones regulate the sodium and potassium content of the body. When they under-supply their hormones, the body experiences gross fatigue and changes in pigmentation. If the glands over-supply their hormones, the patient may also suffer from gross fatigue and physhic disturbances bordering, at times, on psychotic states. Moreover, these hormones combat inflammatory processes in the body wherever inflammation may occur.

Without attempting to prescribe the adreno-cortical steroids for any particular individual, let me mention some of the disease processes where inflammation is present in which prednisone and predniso-

FIGURE 3

THE UNITED STATES CORTICOSTEROID MARKET AT THE MANUFACTURER'S LEVEL.



lone have been used with success, either alone or in combination with other drugs. Examples of these are ulcerative colitis, diarrhea and weight loss due to enteritis, infectious hepatitis, cirrhosis of the liver, the mumps (a condition in which the testicles are attacked and which, in over 50 per cent of the untreated cases, results in permanent damage to the affected organs) bursitis, rheumatic fever and rheumatic arthritis, certain anemias, inflammation of the eye, various forms of dermatitis or skin inflammations, allergies, asthma, tuberculosis and leukemia.

Steroid chemistry is a highly specialized and highly complex chemistry—in fact, one might liken it to the finest type of watchmaking. Moreover, the complexity of steroid chemistry is such that many more synthetic steps are required to produce a drug and, therefore, the over-all yields are ordinarily quite low, in contrast to the chemistry of other medicinal substances such as aspirin, the antihistamines, the tranquilizers and the like. Consequently, the cost of these

steroids is relatively high.

A steroid is a molecule of at least 18 carbon atoms, together with an appropriate number of hydrogen and oxygen atoms, the basic framework of which is three-dimensional and consists of four fused rings. The basic framework is known as the "steroid nucleus." Unfortunately this bare framework is not to be found in nature as such, nor has it ever been proved feasible to construct it by complete synthesis in commercial quantities, so as to provide the chemist with raw materials from which to build physiologically active hormone or hormone-like substances. Instead, the chemist works from one of the steroids that can be isolated in fairly large quantities from natural substances.

First, sitosterol can be obtained as a by-product of the processing of soya bean oil. It has 29 carbon atoms, a side chain at position 17, a hydroxyl group at carbon 3 in the A ring and a double bond at positions 5 and 6.

Second, diosgenin, with 27 carbon atoms and a double bond in the B ring, is isolated by extraction from various roots found in Mexico and Central America, principally from Dioscorea vines.

The side chains on these raw materials are unlike the side chains found in hormone molecules, and a chemist must go through a complex series of steps in order to convert these natural steroids into the drugs he is seeking to make.

Desoxycholic acid constitutes about 8 per cent of the content of dried cattle bile, and it can be made in a fair yield from the other principal substance in bile, namely, cholic acid. In the desoxycholic acid process it is necessary to make four basic changes to produce prednisone:

(1) removal of the unwanted atoms on the side chain, which requires eight separate steps; (2) rebuilding of the desired side chain on ring D, which requires five steps; (3) shifting the oxygen atom from position 12 to 11 in ring C, which requires ten steps; and (4) introduction of the double bonds into positions 1 and 4, and substitution of the ketone for the hydroxyl at position 3, which requires five steps.

The process from diosgenin is somewhat shorter, 15 steps as opposed to 28, and involves the following: (1) removing the unwanted structure on ring D, in three steps; (2) rebuilding to the desired side chain on ring D, in six steps; and (3) introducing the oxygen into position 11 in the C ring shifting the double bond in ring B to ring A, introducing the second double bond in A and changing the hydroxyl at C_3 to a ketone. This requires six steps.

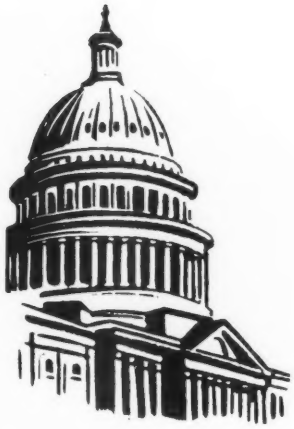
In the last three years, three companies, all American, and we are one of them, have extensively studied the use of various organisms to perform chemical changes in steroids. These organisms are grown in some suitable medium and are added to the steroid to be changed, under conditions closely controlled to avoid contamination by unwanted organisms such as are present everywhere. In addition, the time of the reaction must be carefully determined and regulated because the "bugs" that will effect the desired changes will also make changes that are not desired. Consequently, the maximum yield must be determined in relation to time and the processing stopped before the destructive process takes over.

Steroid transformations are ordinarily performed in batches a step at a time with isolation, washing and drying of the product of the reaction at the end of each step before it can be introduced into the next step in the process. The production of steroid drugs, therefore, is unlike cracking oil, where heat and pressure change the oil into gases, which can be separated in a single continuous process in a column at various levels according to volatility. Steroids, on the other hand, must come to rest at each step, which, of course, greatly increases the handling and consequently the cost of the end product. Moreover, the complexity of the molecule and of the changes which must be made to reach the desired product usually leads the material through a series of steps where the end yield is low even though the yield in each step is high. For example, a 28-step process with a 90 per cent yield in each step produces an over-all yield of only 5 per cent from the original material, and if any one of these steps is as low as 60 per cent, the final yield will be reduced to 3.3 per cent of the material with which the manufacturer started. Since the chemistry is indeed very involved, it is usual for at least one of the steps to be in the 50 to 60 per cent range. In a fifteen-step process at 90 per cent yield in all steps but one and 60 per cent yield in this one step, the final yield would be 14 per cent.

It will interest you to see how greatly the little molecular changes cause steroids to vary in therapeutic effect and dosage. Testosterone is the male sex hormone produced in the testes. It has only one double bond in the A ring, a methyl group attached between the A and B rings, and a ketone at C_3. The female sex hormone—estradiol produced in the female ovaries—is very similar, having three double bonds instead of one in the A ring, a hydroxyl instead of a ketone at C_3 and no methyl between the A and B rings. Yet these small differences are sufficient to develop male characteristics in man with the one and female characteristics in woman with the other.

Although estradiol is the true estrogenic hormone of the female, a Schering research worker in Germany discovered in 1938 that the addition of an ethinyl substituent at C_{17} gave a compound that was ten times as active as estradiol when taken orally. By means of other changes, it has also been possible to increase similarly the activity of testosterone.

In 1954, we discovered prednisone and prednisolone in our laboratories and this, likewise, was a product that was better than nature's own cortisone or hydrocortisone. *(Continued on page 380)*



THE P.M.A. LOOKS AT GOVERNMENT MEDICAL RESEARCH

The Pharmaceutical Manufacturers Association, through its Board of Directors, recently approved the following statement regarding the support of medical research and education by the Federal Government. The main point made in this statement is the avoidance of a 25 per cent deficit in the number of medical scientists needed by 1970.

The Board of Directors of the Pharmaceutical Manufacturers Association believe that it is constructive at this time to state their views as to the support of medical research and education by the Federal Government. At their meeting in New York City, January 8, 1959, they therefore approved the following statement.

In 1940, according to the Report of the Committee of Consultants to the Secretary of Health, Education, and Welfare, commonly known as the Bayne-Jones Report, the Federal Government contributed $3 million to medical research. In 1958 federal expenditure for medical research reached $227 million. (Data relating to the National Institutes of Health, September, 1958).

The pressures upon the Congress and upon Federal agencies for *practical* results are apparent and unquestionably will increase in direct relation to the size of the expenditures. But as the Bayne-Jones Report states, "pressures for practical results cannot be allowed to supersede the kind of fundamental studies, which, over the long run, produce revolutions rather than merely improvements in health standards." In his communication of last July to President Eisenhower, Dr. Alan T. Waterman, Director of the National Science Foundation, makes a similar statement: "As history amply records, the most epoch-making scientific discoveries have come from basic research."

Some noteworthy basic research is being carried out in the laboratories of the pharmaceutical industry, but the major centers for this basic effort are non-profit institutions, universities, medical schools and research institutions. The research and development work of our industry largely rests on this foundation. On the other hand, the pharmaceutical industry, with its $127 million expenditure in 1957, and at least $170 million in 1958, already does outstanding applied research and development leading to clinically useful products. After every advance in the laboratory and clinic, it has been the pharmaceutical industry which, with its own funds, has created the modern medicines which have benefited so many.

The present cancer chemotherapy program, involving an extensive series of contracts with pharmaceutical firms, should not be taken as a precedent for the attack on other disease categories. In the cancer field, the lack of leads after so many years of effort together with the nature of the problem, probably required a government subsidy to industry (devoted principally to an experimental mass screening program of all types of chemical agents) in order to supplement the basic research program being carried on in the laboratories of non-profit institutions.

In fields other than cancer, the pharmaceutical houses are pushing the search for new drugs with adequate funds and with every means at their disposal in the light of present knowledge. It is our basic knowledge that needs to be increased, as rapidly as possible, and Federal funds should be channeled to academic institutions, which need them to support and expand their basic research.

Moreover, in our total medical research activities the paramount problem is the critical shortage of scientific personnel. The extent of this personnel shortage is well documented: The Bayne-Jones Report indicated that 25,000 additional scientists will be needed by 1970, but that present training facilities will provide only 19,000. This is a deficit of more than 30 per cent. A recent editorial in the J. A. M. A. (November 15, 1958) points out the alarming number of unfilled faculty positions in our medical schools even today.

Government subsidies for industrial research would

(*Continued on page 383*)

Perfume Formulation

THE VIOLET GROUP

BY J. R. ELLIOTT PERFUME-FLAVOR CONSULTANT

Of the violet group, the violet fragrance and its related specialty effects are the most important to the perfumer; they are all based on the ionones.

Cassie and mignonette (Reseda) are classified with the violet because the ionones are used extensively in their make-up. As fragrances they themselves do not seem to have much attraction for the general public. This is probably because these flowers are not familiar in American gardens. Natural cassie and mignonette are used as adjuvants and modifiers in violet fragrances, and also find minor uses elsewhere in fantasies. The same is true of cassie and mignonette compositions. Of the two, cassie is used more frequently because of its closer resemblance to violet. Small amounts of cassie types are useful in aldehyde bouquets to help minimize the thinness of the aldehydes, and in fougeres and chypres for the interesting "twist" they can confer on these classic themes.

The Ionones

Tiemann's original ionone synthesis consists of two steps: the aldol-type condensation of citral with a ketone to make the so-called "pseudoionone"; and the cyclization of this product to form a citrylidene ketone. If the initial ketone is acetone, the end product would be the conventional commercial ionone. If the ketone is methyl ethyl ketone, then the result would be the familiar methyl ionone. "Methyl" is not correct nomenclature, but is used to indicate that the methyl group in the side chain of the parent ionone has been extended by one CH_2 group. "Ethyl" ionone would mean two CH_2 groups, and so on. Alpha and beta isomers exist for all the ionones, determined by the position of the double bond in the citrylidene ring. Thus, alpha ionone in Geneva nomenclature would be called: 4(2,6,6-trimethyl-2-cyclohexenyl) buten-3-one-2. Beta ionone would then be 1-cyclohexenyl structure, indicating the shift of the double bond in the foregoing nomenclature. The ionone structure on paper is a substituted and partially hydrogenated relative of the familiar benzylidene acetone.

Ionone and methyl ionone, made, respectively, from acetone and methyl ethyl ketone, have been conventional fragrance materials for decades. Few people—and this includes a substantial number of present day perfumers seem to realize there are other ionone derivatives available that have considerable novelty and utility. For example, carrying out Tieman's synthesis with diethyl ketone produces dimethyl ionone. This is a methyl ionone in which an additional methyl group is attached to the carbon adjacent to the ketone carbonyl group on the side-chain connected to the double bond. In Geneva nomenclature, this side-chain fragment would then be called: penten-4, 4-methyl-one-3. Because of the symmetry of the parent ketone, this so-called dimethyl ionone exists only as the alpha and beta isomers. It is available as the alpha-beta mixture, possessing a curious semi-fruity orris-like note. In perfumery its orris note is useful in conjunction with vanillin, heliotropine, coumarin and musk ketone to produce interesting "powdery" notes. It is also attractive as a modifier of the conventional methyl ionone note. In flavors, it finds its best use in raspberry to create the seed effect.

Another derivative, not well-known in America, is the so-called "acetyl" ionone, made by condensing acetylacetone in the Tiemann synthesis. Because of the symmetry of the parent ketone, acetylacetone, this exists only as alpha and beta isomers. This alpha-beta mixture has a peculiarly intense fruity-violet effect partially recalling the citrus notes. It provides a nuance in cologne designs when combined with the citrus oils. Although it blends well with all the citrus oils, it is most favorable with orange, mandarin and petitgrain. In flavor work it is especially interesting in conjunction with mandarin oil for the fruit flavors raspberry and strawberry. In cosmetic work this acetyl ionone will serve as a fruity modifier in place of the citrus oils, with consequent safety against deterioration, discoloration and irritation.

The various ionones can be hydrogenated at their double bonds, to produce a series of striking variation on the ionone themes. Hydrogenation usually produces an increase in the "precious wood" effect of the ionone, at the expense of its violet notes. This change makes these products extremely useful for creating the "expensive" finish in th lower-priced fragrances.

It is believed that many more of the unusual ionone derivatives have ben made, but are being held as "captive" chemicals because of their originality. The author feels that the secret of a certain world-famous rose specialty lies in one of these "captive" materials.

He has done some rather intricate work on the synthetic variation of the cyclocitrylidene ring structure ionone note may be altered strongly in the direction of the rose absolute odor. This is a fertile field for investigation, but not an easy one.

Because of the isomeric complexity of the ionones, it is suggested that the prefumer select ionones according to his artistic preference and then consistently buy from the same sources to avoid odor deviation.

Odor Characteristics of the Ionones

All of the commercially available ionones strongly resemble the fragrance of the violet flower. Their special and different nuances are produced by variation of the ketone structure in the side chain, coupled with the position of the double bond in the citrylidene ring.

The basic requirement of all the ionones is that they be free of "terpeny" by-odors. This grassy odor is derived from the lemongrass oil used in commercial ionone synthesis, and results from inefficient distillation during synthesis of either or both the initial pseudoionone or final ionone. This "terpeny" effect is most likely to be found in the soap grade ionones.

Commercial ionone (made from acetone) is available in three forms: ionone AB (the alpha-beta mixture), alpha ionone, and beta ionone. Ionone AB finds its principal use in soap and low-priced fragrance oils. It has a slightly coarse but nevertheless attractive violet note. This AB mixture may be chemically separated into pure alpha and beta ionones. Alpha ionone is intensely sweet but "thin." Artistically it is the better violet representation of the two isomers. Beta ionone, less important in fine perfumery than alpha, has a coarse violet note recalling a diluted raspberry fragrance.

Commercial methyl ionone (made from methyl ethyl ketone) is a mixture of four isomers, of which the iso-alpha is considered the finest in odor. Since this isomer has a boiling point differential from the others of nearly ten degrees, the various methyl ionones offered on the market under fancy names are usually redistillations of the initial methyl ionone, coupled with the reblending of various cuts, to provide a material rich in the artistically desirable alpha-iso fraction.

In general the methyl ionone note has a violet character with strong inflections of a "precious wood" effect. It is used in the violet group as a modifier of the thin ionone note, particularly the alpha ionone. This use is, however, relatively minor. Its "precious wood" effect makes it useful in a wide range of fantasies outside the violet group, to such an extent that its consumption for this purpose is many times that for violet production.

The ionone, "Ianthone" (made by condensing the unsaturated ketone mesityl oxide), was, and presumably still is, available in Europe. It possesses a most unusual pungency and is interesting both by itself and as a blend for fantasies with methyl ionone.

The dimethyl and acetyl ionones have been sufficiently discussed, and further comment is not necessary at this point.

The perfumer should be careful in his work with the ionones for two reasons: they are intensely provocative of olfactory fatigue, which makes it increasingly difficult to judge their effect in a composition as the work with them progresses; and they have a strong tendency to make the frangrances into which they are introduced flat. This quality is useful in softening the rough edges of compositions, particularly those containing aldehydes; but it can also cause an otherwise attractive fragrance design to flatten out and become dull.

The Ionone Specialties

The various ionones can be so well blended together as to produce a range of interesting effects that specific compositions have been built around them. Most of these specialties are built around methyl ionone, since it is the most versatile of the ionone series. Thre such products are shown below:

E.031 METHYL IONONE BOUQUET "A"

8	Vetyverol
6	Santalol
1	Oil labdanum distilled
1	"Veronol" aldehyde 10% in methyl ionone
984	Methyl ionone standard (rhodia)
1,000	

This composition, merely touched-up methyl ionone, has an odor remarkably more attractive than plain methyl ionone. It possesses a warm woody tone with a delightful iris and amber background. Furthermore, the presence of the vetyverol and santalol give it excellent stability. It will not go "sour" even after prolonged standing in a bottle under the adverse conditions of heat and light.

E.032 METHYL IONONE PARMA TYPE

3	Labdanum oil distilled
3	Aldehyde C-12 MNA 100%
5	"Veronol" aldehyde
10	Iris concrete
50	Vetyverol
50	Santalol
50	Tetrahydro methyl ionone
819	Methyl ionone standard (rhodia)
1,000	

This composition represents an elaborate modification of the methyl ionone fragrance for ultrafancy work. It is particularly effective in conjunction with

(*Continued on page 384*)

So much interest was aroused by Mr. Bryan's paper in our October 1958 issue on the subject of Lactobacillus Acidophilis and Lactobacillus Bulgaricus, that we present here an expansion of the subject.

NATURE'S GASTRO-INTESTINAL ANTIBIOTICS*

BY ARTHUR H. BRYAN
AND CHARLES A. BRYAN
JACKSONVILLE UNIVERSITY, FLA.

Mixed *Lactobacillus bulgaricus* and *Lactobacillus acidophilus* on a thioglycolate medium act as antibiotics in inhibiting the microbal growth of mixed intestinal flora obtained from stool cultures.

Introduction

Elie Metchnikoff, the great Russian bacteriologist who lived from 1845 to 1916, was the first observer to note the beneficial effects of *Lactobacillus acidophilus* and *bulgaricus* in gastro-intestinal dysfunctions. Although modern geneticists might disagree, he advanced the theory that the longevity of Bulgarian and Rumanian farmers was due to the regular imbibition of milk and yogurt cultured with these two organisms, which are normally produced by the billions in their usual habitat, namely silage.

That *L. bulgaricus* and *acidophilus* have both prophylactic and therapeutic value in many disorders of the alimentary canal seems fairly well established. Here, in this country, *Lactobacillus*-cultured milk had its vogue during the early twenties, but gradually died out as new medical discoveries took the spotlight. Some vitamin firms and pharmaceutical houses are staging a comeback with these two organisms by dispensing them in dehydrated, *in vacuo* capsule form. Some enterprising dairies are marketing *acidophilus*, fruit-flavored yogurt, but sales are not what they should be, due to lack of public education as to their value.

Elsewhere, especially in European countries such as Austria, Norway, Holland and Switzerland, *acidophilus*-cultured yogurt appears regularly on the breakfast table.

Over a fairly long period, with lactobacilli taken regularly, the feces undergo notable changes, including the absence of noxious odors, color changes from bile yellow to almost white, with a semi-soft excrement resulting in regularity in defecation.

In the Near East, despite the high incidence of *Shigella* and *Salmonella* dysenteries among visitors in Syria, Lebanon, Egypt and Turkey, for instance, statistically, the natives seem to be comparatively free of these diseases. One theory is that they are immune to enteric infections, with high corresponding antibody titers. However, it is noted that daily these Near East peoples consume leben, a composite of thickened salted curds cultured with *L. acidophilus*, from which the whey, the watery milk serum, has been separated. It resembles our own cottage cheese.

Biochemical Observations

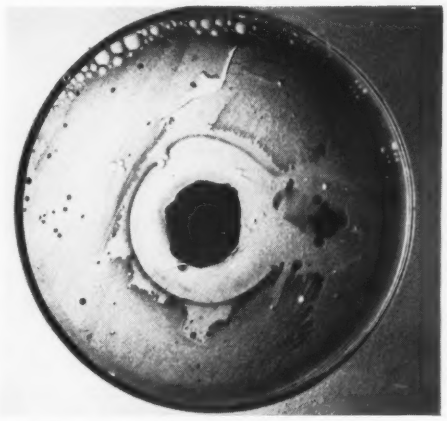
While clinical observations are valuable, bacteriological and biochemical data are obviously required these days if *L. acidophilus* and *bulgaricus* therapy and prophylaxis is to be revived in this country for the control of gastro-intestinal disorders. In the alimentary tract and also in milk, there are two fundamental processes, the one being aerobic, glycolytic fermentation of carbohydrates, which is normal, as opposed to anaerobic proteolysis or putrefaction, which in excess may be abnormal.

The lactobacteriaceae are usually homogeneous or heterogeneous glycolytic fermenters of carbohydrates producing lactic acid in varying amounts. They include *Lactobacillus bulgaricus, L. acidophilus, L. mesenteroides, L. bifidus, L. casei, Streptococcus lacticus* and *pneumoniae* and *Escherichi coli*. The latter, *S. lacticus* and *pneumoniae*, and some of the lacto-

*Presented at the December 1958 Convention of the Florida Academy of Sciences, Jacksonville University, Jacksonville, Fla.

bacilli, are homofermenters, that is, they produce lactic acid as a catabolic product of their own metabolism.

Heterogenous fermentation occurs with the splitting of hexose $C_6H_{12}O_6$ to $2C_3H_6O_3$. However, mixed fermentations can take place in milk, and hence in the alimentary canal, when milk is imbibed. Here the formation of acetic acid $C_2H_4O_2$, formic acid HCO_2H and alcohols is accomplished with the end product succinic acid $(CH_2CO_2H)_2$, by aerobacter aerogenes, a constant floral member of the intestinal tract.



The two lactobacilli on sensitivity discs act symbiotically, creating inhibition zone against mixed intestinal flora including *Salmonella, Shigella*. Small disc was impregnated with 1:100 lactobacillic milk culture (to the right of the center disc).

Acetic and Formic Acid Fermentation

The pseudomonas and *Acetobacter acetus* cause aerobic acetic acid fermentation from ethyl alcohol when there is a high concentration of fruit sugars previously fermented by yeasts, such as *Saccharomyces cervisiae*. The sugar fermentation is represented by the equation $C_6H_{12}O_6 = 2C_2H_5OH + 2CO_2$. It should be noted that most of the flora produce CO_2 gas in the respiratory oxidation of foods.

The enterobacteria cause formic acid fermentation, which the enzyme hydrogenylase breaks down to CO_2 and H_2.

Anaerobic Fermentation

Clostridia, such as the *C. aceto-butylicum*, in anaerobic fermentation produce:

(1) butyric acid $C_3H_7CO_2H$, from butyl alcohol C_4H_9OH in the intestinal tract, excreta and in perspiration, from which the odor is unpleasant;

(2) propionic acid $C_3H_6O_2$, from propyl alcohol C_3H_7OH and formed by the propioni-bacteriaceae, frequent invaders of the intestines, which is also pungent;

(3) isopropyl alcohol, C_3H_8O, which may be oxidized in the intestine to acetone C_3H_6O, by the enzymes of the acetobacters;

(4) pungent hydrogen sulfide, H_2S; indole

The large disc, which was soaked in a milk culture of *L. acidophilis*, shows an inhibition zone against all but *E. coli*. The smaller discs, which were impregnated with dilutions of 1:20 and 1:50 mixed lactobacilli, show diffusion zones of bacterial antagonism.

C_8H_7N; skatole C_9H_9N; mercaptan C_3H_9SH—proteolytic, anaerobic decomposition products resulting from the incomplete oxidation of foods in the course of digestion;

(5) deamination fermentation of amino acids, characterized by the NH_2 group, break down from alanine to pyruvic acid $C_3H_4O_3$ to acetic acid $C_2H_4O_2$; and

(6) evil smelling amines, formed by some anaerobic sporebearing clostridia from the amino acids in the intestines.

Opposing Biochemical Reactions Can Occur

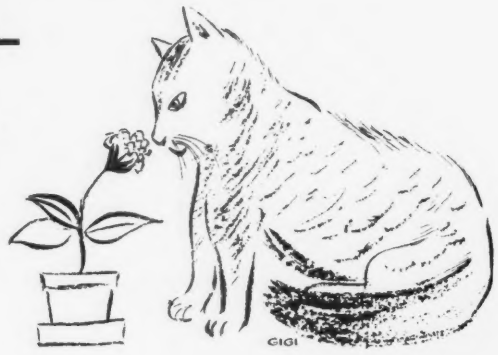
It can be seen from the above that two opposing biochemical processes take place in the alimentary canal, namely, aerobic versus anaerobic microbial fermentation. Along with the complex reactions that take place both normally and abnormally in the gastro-inestinal tract, the biochemistry of digestion is further complicated by the glandular enzymes se-

(*Continued on page 387*)

A milk culture of *L. bulgaricus* diluted 1:50 was poured over half the surface of a medium containing intestinal flora grown on Brilliant Green for 48 hours at 37° C. Some possible bacterial antagonism may be noted in the darker zone of the plate.

THE MECHANISM OF SMELL

BY R. W. MONCRIEFF
CONSULTING RESEARCH CHEMIST
83 ST. PANCRAS, CHICHESTER, SUSSEX, ENGLAND



It is odd that the mechanism of smell should have defied elucidation for so long; the senses of vision and hearing have been understood in considerable detail for a long time. The complexity of the ear and the eye compared with the apparent simplicity of the olfactory cleft have contributed to this state of affairs; an elaborate and complex organ such as the eye affords clues to the way in which it works but not very much can be deduced at first sight from the small area of pigmented skin high up in and to the back of the nose which constitutes the receptive area for smell. There has, it is true, been no lack of theories of olfaction and these were reviewed by the author[1] in a previous publication.

In the main, the theories have been of two kinds: corpuscular and vibrational. Nowadays we can rule out vibrational theories pure and simple, because it is quite evident that odor is air-borne and that the vapor of an odorant material must reach the interior of the nose for the sensation of smell to be stimulated. So much is clear, so clear indeed that it is surprising that the vibrational theories received the attention and respect that at one time they did; it is a matter of everyday experience that odor travels downwind and it is not uncommon to see an animal sniffing the air as it stands directly facing the wind; furthermore, any air barrier such as a well-stoppered bottle, effectively bars the appearance of smell. It has been appreciated, in fact, for some years that the vapor of an odorant must reach the nose to stimulate smell, but further information about the action of the odorant molecules on the olfactory receptors has been scanty and the subject has been one of considerable controversy.

Work which has been carried out by the author in the last few years has thrown new light on the subject and enabled an understanding to be attained of some of the processes involved and has, moreover, accounted satisfactorily for some of the most evident of the properties of smell.

Behavior of Odorants Towards Adsorbants

It has always been clear that there is a close relation between smell and adsorption. Substances that smell are easily adsorbed and, as a rule, the best way to catch and hold a smell is to adsorb it on active carbon. It has been shown by the writer[2] that smells that are similar behave similarly towards some inorganic adsorbents, whereas dissimilar smells behave dissimilarly. For example, substances such as the esters, which have fruity smells, are usually adsorbed by active carbon, silica gel, fuller's earth and activated alumina. There has seemed to be some indication that the method whereby we discriminate between smells of different kinds is associated with a process of adsorption.

Sorptive Properties of the Olfactory Membrane

In a paper published in 1955[3] it was shown that when air which contained an odorant in vapor form was passed through the nasal passages of the head of a recently killed animal, the air which emerged at first from the nose was odorless; furthermore, under controlled conditions of air flow and with the same head, the time for emergence of smell in the air that had passed through the nasal passages was, for a particular odorant, reasonably constant. Many kinds of odorant were used and all of them were removed by passage through the head of a sheep or a rabbit. Furthermore, the odorant could be recovered from the head by later blowing pure air through it; the reversibility of this process was characteristic of an adsorption process. Still further, one odorant material would displace another that had already been adsorbed on the olfactory membrane, a process which was taken to be one of preferential adsorption. It was also established that pieces of tissue which had been removed from the olfactory area were extremely good adsorbents and that they would rapidly deodorize the odorous air in a vessel into which they were intro-

(Continued on page 390)

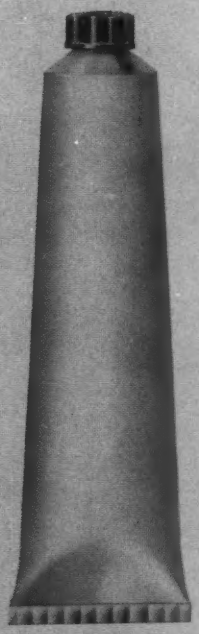
Packaging and Selling

Lanvin Parfums' refillable aerosol container
designed by Cartier and manufactured by Scoville Manufacturing Company, with a polished brass cap and base, fluted sides of black anodized aluminum and the Lanvin trademark debossed on the cap top. The unmetered valve by Valve Corporation of America will deliver three ounces of toilet water, and the container is leakproof, unbreakable and refillable. Bottle by T. C. Wheaton.

FAVORED IN THE PACKAGING OF COSMETICS

In drug, industrial and household product packaging, too.

SHEFFIELD TUBES



THE SHEFFIELD TUBE CORPORATION

Home Offices: New London, Conn.

Sales Offices: New York, Chicago, Los Angeles

Beauty deserves the best.

That's why leading cosmetic

manufacturers select

Sheffield Tubes. For here is

the smarter appearance...

ease of use... and proven

reliability that give women

the irresistible urge to buy.

Sheffield Tubes

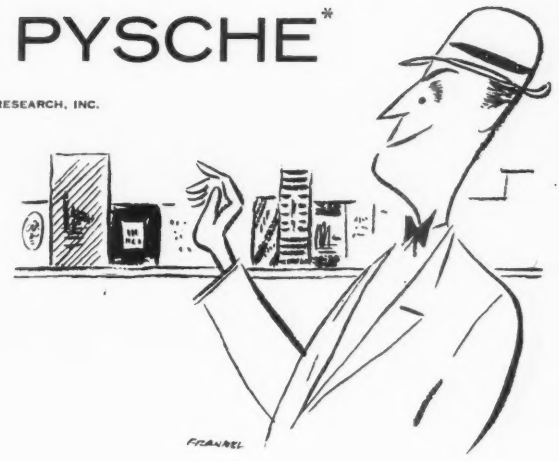
. . . let Maryland Glass design a bottle or jar for your exclusive use

When you drop a packaging problem in our lap, the end result is more than a glass container. It is an idea . . . born of restless imagination, shaped by skilled hands, backed by years of sound experience. Our creative staff gives you a selling package that packs well, helps stop the eye and start the sale at the point of purchase. For a successful solution to your design problem, contact MARYLAND GLASS CORP., 2150 Wicomico St., Baltimore 30, Md.

PACK TO
ATTRACT IN
MARYLAND
GLASS BLUE • FLINT
AMBER

PACKAGING TO PLEASE THE PYSCHE*

BY WILLIAM SCHLACKMAN, INSTITUTE FOR MOTIVATIONAL RESEARCH, INC.



Several years ago a marketing consultant of considerable importance stated that the whole business of trying to find out what psychological factors influenced a consumer's attitude toward a package was much "too tricky" to be included in any research picture. He suggested that relying on test market procedures alone was enough.

No one would deny that the most important criteria for package success is the extent to which it facilitates purchase behavior. It is my opinion that a complete package research program should include a market test in its final phases, but to rely solely on the market test is like trying to bat in the dark. If you make a hit you never know when, why or how far the ball went. The use of a market test alone limits your findings. From it, you are able to determine only that A is better than B, but not why—the old package could have been so bad that anything would have been an improvement—for, you do not know: (1) how your package is influencing the brand image of your product, or (2) what uncontrolled variables are influencing your test findings. For this reason it is almost impossible to equate test markets and other experimental control conditions.

In spite of the limitations of market tests, I believe they should be conducted after all those "tricky psychological" problems have been dealt with.

We may divide consumer response to a package into two major areas: (1) the visual and perceptual factors and (2) the symbolic communication, or the meanings—both rational and emotional, attached to the package. At the present time, there is some controversy regarding the relative importance of these areas, but there is more agreement than some press releases would indicate.

I will not dwell on the important area of the perceptual and visual factors. However, from the motivational viewpoint two aspects of perception which bear directly on the symbolic meaning attached to the package should be discussed.

The first of these might be termed the *need-tension system* of the viewer. Consider two women walking through a supermarket, both of whom see a package of Swanson Steak Dinner with its illustration of sizzling steak and hot French fried potatoes. Viewer A has just had an appetizing steak for lunch. Viewer B has not eaten all day. Aside from the fact that Viewer B is likely to salivate and have other physiological reactions, the actual *size* perception of the graphic material will be larger for her. The detail and articulation of the food will be more intricate and intense. Viewer A, on the other hand, may see it as smaller and flatter.

Many laboratory experiments have shown that the state of need existing in the organism influences perception of the stimulus field. Although I've given an extreme example in the physical sphere, the same principle can be extended into the psychological realm.

For example, a person preoccupied with body odor anxieties may amplify the size of the printed claim on a deodorant package. I have found, for example, that in having respondents draw a certain package of hair tonic from memory, some will exaggerate and distort the claims relating to hair conditioning, while minimizing other claims which, in fact, were more important. The men who distorted in this way, I found, were deeply concerned with oncoming baldness.

The important fact is that we cannot understand *perception* without knowing both the perceiver and the structural elements in the visual field.

The second motivational aspect of perception is a knowledge of these structural factors in the field, which we may conceive as existing both within the person and in the external stimuli. And there are some very definite laws—structural principles—governing perception. An important example of which we are all aware is the fact that intense solid color tends to be seen as moving forward while lighter hues recede.

Though a given configuration will be perceived in the same way physically, that is, the retinal image and pattern on the occipital lobe will be the same in

*Abstracted from a paper presented at the 20th National Packaging Forum of the Packaging Institute, Inc., Chicago, Ill.

Ivers-Lee . . . a company of people, plants and ideas . . .

Package millions of units... recall any one lot fast!

Ever try recalling specific drug lots already in the field? It's a tough, costly, "needle in a haystack" job.

Now, thanks to Ivers-Lee's new Coding Process, "IL INSTA-PRINT", the recall of any drug is quick, selective, economical. Ivers-Lee imprints **individual** Unit Packages with such data as code number, expiration date, trademark, name or dosage—positively identifying **each single pocket** until it is actually used, even if the outer container has been lost.

Coding is available in all colors, and Ivers-Lee's unique "IL INSTA-PRINT" process insures exact, permanent, scuff-proof identification.

To learn how your next Sealtite package can benefit from this exclusive coding feature on **every single pocket,** call your Ivers-Lee account man today!

IVERS LEE CO.

Ivers Lee Co.

216 CENTRAL AVENUE, NEWARK, NEW JERSEY

all individuals, the associated meaning of the patterns will vary from individual to individual according to the pertinent cultural experience. In other words, all perception is physically the same, but is interpreted by each individual according to widely varying social, personality and cultural factors. Consider that the form "V" refers to a letter in the alphabet, the letter V. Yet it may also refer to "V for Victory" with all its World War II connotations.

In our experiments, for example, we find that smooth curved lines are female associated, while square solid lines are male associated. White and other cooler pastels go with ideas of cleanliness. Through cultural, personal and social associative conditioning, color and form assume meanings which are not inherent in the perceptual process.

The image of a concept is strongly influenced by its graphic communication, and the graphic symbolism on a package similarly influences perception of the product. The graphic communication on a package transmits a message or meanings about the product beyond the rational meaning of the copy or product itself.

In order to illustrate this point we conducted the following experiment at the Institute with a package of Marlboro cigarettes. In one case we changed the logo style of the brand name. For control purposes one package was left as it is commonly seen. Two equated groups of *non-smokers* were used. One group was exposed to the changed design, the other group was exposed to the regular package. This was followed by free association and projective questions with each group.

The results overwhelmingly indicated a difference in the projected image of the product. The modified design was seen as more expensive, feminine and elegant, and the product was seen as mild. In the control group the regular package was seen as less expensive, stronger and generally more masculine.

I think this simple experiment demonstrates that a package projects an image not of the package alone but, through an associative process, of the product itself.

Here, several important points should be raised. First, testing the visual impact of a design is not enough; it does not tell us what is, in fact, being communicated to the consumer. I recently conducted a study on a men's toiletry product which had been subjected to visual tests. Its visibility ratings were outstanding. However, our research indicated that, though the design had visual impact, it projected an image of the product which was essentially negative. Rather than suggesting such important and positive ideas as "cool and refreshing" it suggested "heat," "stickiness," and left consumers with the feeling that they were dealing with a somewhat jocular and not really serious product.

Secondly, our work indicates the need for three phases in a psychological research project:

(1) We must conduct motivational research to determine what are the major psychological appeals for the product. This serves as a criterion on which designers can base alternate designs.

(2) The research and the design process should be coordinated so that, as new ideas come up, they may be tested systematically. It is at this stage that visual and motivational research should be conducted. At this point the designer coordinates his activity with the technical and marketing requirements for the prospective package.

(3) The final designs should be tested against the old design and significant competitors. The extent to which the package fulfills the image requirements should then be evaluated against the pre-established criteria in the first phase.

It has been our experience that when a plan of this nature is followed it invariably leads to a superior package.

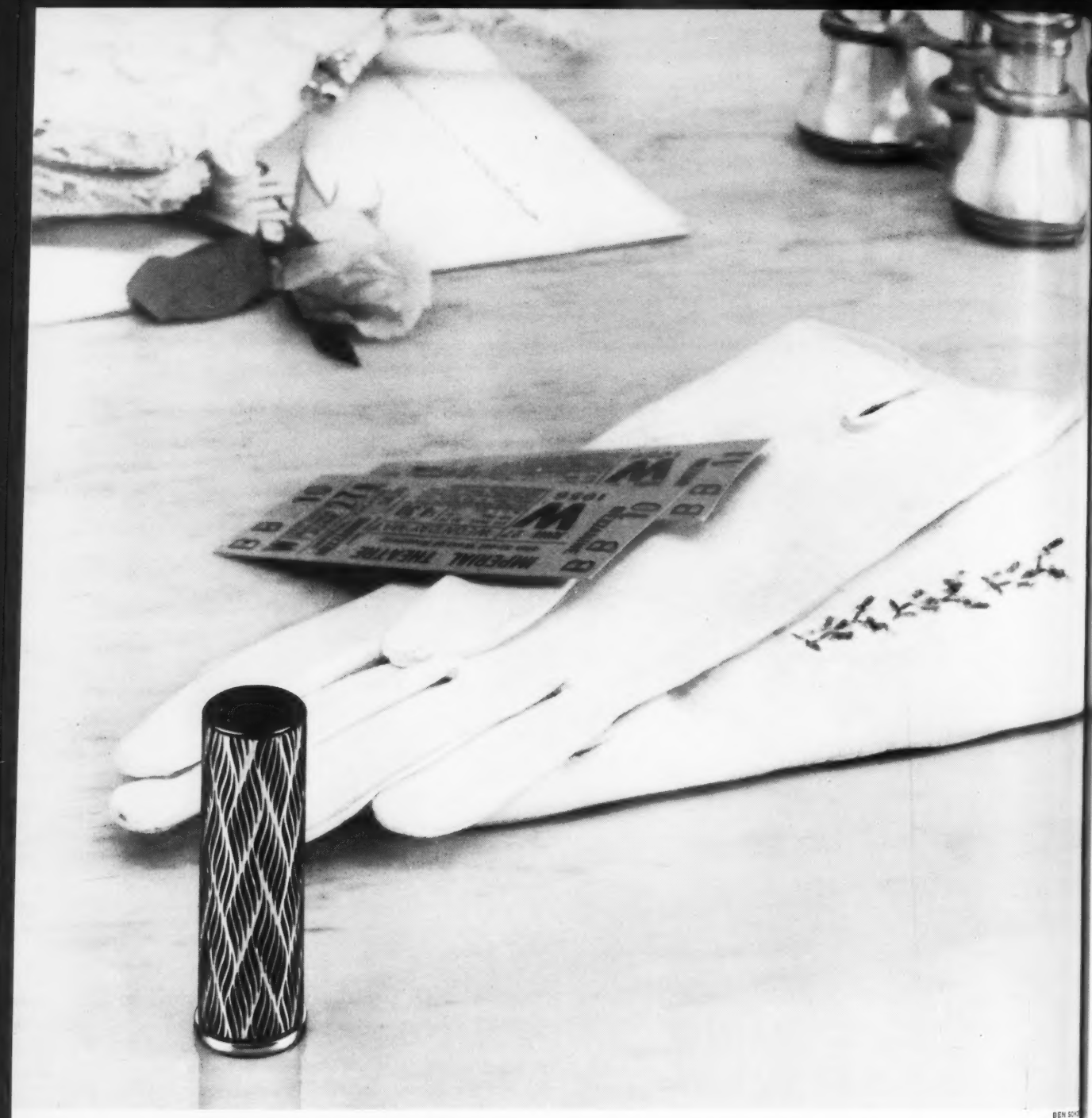
I hope no one concludes that this field has all the final answers, or that we have instruments which can measure or analyze human behavior completely and accurately. On the contrary, we don't have final answers; we are constantly looking for new techniques and methods by which we can study the many problems we face. In fact, we have recently developed a new and promising projective test.

In helping our clients develop packages for their products, we do not base our recommendations only on the specific research conducted around one package or one product. We also draw heavily on our previous research and experience with other products, to establish general criteria for judging what a whole category of products must convey to the consumer through its packaging. However, we are often left with the need to define more specifically possible elements to be contained in the package design. Probably the most effective way is to allow the designer to use the general findings freely and to follow the design repeatedly with research—an expensive procedure.

In order to facilitate this process we have been working with a new projective test which we call the Symbol Mosaic Pattern. It sounds ominous but it is really very simple, consisting of cards divided into three groups: form—black and white patterns, color and texture. With these design elements the respondent is asked to select two cards from each group which express the mood or feeling conveyed by the stimulus. The stimulus may be sound, tactile stimulation or a word.

Now, assuming that we know the general symbolic and motivational needs for a product and with these findings as stimuli, we can see how the respondent translates these feelings into color, form and texture.

In our study on the male toiletry mentioned earlier, we found that the following symbolic dimensions required expression: freshness, coolness, maleness, strength and solidity. (*Continued on page 392*)



Give YOUR PRODUCT the look of elegance with *Lambert* engraving

Quality-in-Quantity
engine turning
makes elegance practical

If you would like us
to ornament a sample
— to demonstrate how
Lambert engine turning can make
your product elegant in all but cost
— please write enclosing several shells.
There is no cost or obligation.

Lambert Engraving Company, Inc.
Attleboro, Massachusetts

There is no substitute for engraving and engine turning
when you wish to add a look of elegance to your product.
But elegance and high cost are *not* synonymous with Lambert engine turning
. . . for here in Attleboro we have coupled the art of
single tool craftsmanship with our exclusive *multitool* process,
to give you *quality in quantity*.

Packaging and Selling

Here's a quote from Herman C. Nolen, president of McKesson & Robbins, in a lecture at Harvard University's Graduate School of Business.

"No single agency is more affected by the growth of advertising than is the wholesaler. Wholesalers find it difficult to find a market for unbranded or unknown merchandise brands, and that is especially true of goods marketed through self service."

It looks as if wholesalers, in common with the great mass of retailers, are quite willing to abdicate thoroughly all of the functions of selling and yet, still demand a compensation that was originally planned for selling effort. It is no wonder that this country is facing an increasing problem in the mounting cost of distribution.

When a union attacks marketing, that ought to be news. Unfortunately, in our new political atmosphere this could be a portent of things to come.

The United Packinghouse Workers of America have just submitted a detailed indictment of supermarkets to the Royal Commission on Price Spreads in Canada. According to this brief, these organizations reap "super" profits, lead the consumer down the primrose path of promotions and trim the farmer's share of the food dollar.

In addition, according to the brief, the advertising of food has passed the "point of diminishing utility," razzle-dazzle packaging and promotion have greatly widened the price spread; consumers are being systematically overcharged; and the supermarket, instead of widening the housewife's choice, has in fact limited it.

This surely sounds like a new political atmosphere.

According to the news letter, *Grey Matter Retail Edition*, of the Grey Advertising Agency, "Some retailers estimate that cost of merchandise handling can be cut in half by simple cooperation from manufacturers."

A big reason for lack of this cooperation is, according to Grey, that, except in some department stores, the buyer is not responsible for handling the goods. Hence, 101 possible economies of store labor go unrealized because of this separation between buying and operation.

The packaging industry has brought some substantial economies in this direction, but we agree with Grey Matter that this field still has large unexplored areas, not only for economy to the retailer, but also substantial advantages to the manufacturer. The questions of stock supplies at the point of sale and, to a limited degree, effective display at the point of sale, as well as the vital time element between the reception of goods at the warehouse and their appearance at the point of sale, is involved in this problem.

A great many manufacturers are spending huge sums for product research and various forms of marketing research but not one dime on the kind of research that expedites the handling of their goods at the point of sale.

All is not milk and honey with sales contests. Recently the sales manager of a company using contests successfully and frequently urged management not to overlook the indirect costs of contests.

As an indirect cost, this executive listed: (a) a decrease in sales effectiveness on the part of those salesmen who did not win and whose sense of security may therefore have been affected and also (b) customer ill-will which may have been caused by the pressures of the contest.

An automatic shipping program for pharmaceuticals, designed to place the newest drugs in independent retail outlets immediately upon their availability and to centralize detailed information on all new products, has just been announced by Ketchum & Co., Inc., wholesale druggist. These automatic shipments will be handled in each of the seven wholesale drug houses of this company.

The program, called R.A.S.P., which means Rx Automatic Shipment Program, was characterized by Emanuel Katz, vice-president of marketing, as "the most complete Rx automatic shipment program ever conceived by a drug wholesaler."

Under this program, the pharmacist selects those new products from 39 leading pharmaceutical manufacturers that he wants on a regular basis. Ketchum then selects the new products with the highest sales-volume potential from among these manufacturers and automatically sends the retailer small units of these products as soon as they are available. The automatic shipments are enclosed in specially designed super-strong white containers which clearly set the new product apart from the other items delivered to the retailer. Attached to the product package itself are pressure-sensitized, removable labels carrying the cost, suggested selling price and date of shipment.

There is also a 100 per cent return policy, and each druggist who takes part in R.A.S.P. will receive, at

Meritseal... a capful of glamor

Your prestige cosmetic products deserve Crown's distinguished Meritseal closure. Meritseal's tasteful lithography commands attention in the showcase. On your high-speed production line, Meritseal caps spin on smoothly. Their precision-made threads assure easy removal and re-sealing. And there are no problems of expansion, contraction or cracking. Made in sizes from 33 to 100 mm.... with the right kind of liner for your product, all with special Meritseal "lock-in" construction.

for cans • closures • crowns • machinery CROWN

CROWN CORK & SEAL COMPANY, INC. 9300 Ashton Road, Philadelphia 36, Pa.

no cost, an accurate, fast reference service on new pharmaceuticals, including descriptions of the products and all other necessary information.

The 39 manufacturers whose products will be included in this plan are listed below.

Alcon Laboratories, Inc.
Ames Co., Inc.
Ayerst Laboratories
Bauer & Black
Ciba Pharmaceutical Products, Inc.
Dome Chemicals, Inc.
Geigy Pharmaceuticals
Lakeside Laboratories, Inc.
Lederle Laboratories
Eli Lilly and Company
The Massengill Co., Inc.
McNeil Laboratories
Mead Johnson & Company
Merck & Co., Inc.
The Wm. S. Merrell Company
Irwin, Neisler & Co.
Parke, Davis & Co.
Pfizer Laboratories
Pitmore-Moore Co.
Purdue Fredrich Co.
Reed & Carnrick
Riker Labs.
A. H. Robins Co., Inc.
Roche Laboratories
J. B. Roerig & Co.
Sandoz Pharmaceuticals
Schenley Labs.
Schering Corporation
G. D. Searle & Co.
Smith-Dorsey
Smith, Kline & French Laboratories
The Stuart Company
U. S. Vitamin Corporation
Walker Labs., Inc.
Wallace Laboratories
Warner-Chilcott Laboratories
White Laboratories, Inc.
Winthrop Laboratories
Wyeth Laboratories

According to a recent report, the average supermarket today purchases not over 5 per cent of the products submitted to it, and as much as 80 per cent of those accepted products are later removed from stock.

A new job is opening in industry—the product scout.

The product scout, similar to the talent scout, is supposed to travel into every highway and byway around the country in search of new products and new companies with great potentials, which can be purchased by his company.

It seems that the food industry is the first to have made this a full-time executive job.

The Minneapolis newspaper Star & Tribune has just come up with a survey that most certainly startled some of the marketing men in this trade.

It shows that residents of farms and small towns are just as much interested in good grooming as our city people. For instance, 62.7 per cent of the rural men were using an after-shave lotion as compared to 64.7 per cent of the city men. In shampoos it was 60.3 per cent of the rural districts compared to 65.2 per cent of the city.

Cream hair tonic in the country districts was 34.0 per cent compared to 26.4 per cent in the cities.

Advertising men are getting the benefit of a great deal of highly specialized research on the relative value of size, position and color in advertising.

The most recent information, just published in *Printers' Ink*, was a Daniel Starch and Staff report based on a three-year study of inquiries from 8,200 advertisements in national magazines.

Here are some of the results:

(1) There is no known necessary relationship between inquiries and other advertising values. For example, high or low inquiry response is not necessarily directly indicative of high or low product identification, high or low reader product acceptance, and so forth.

(2) Size of advertisements—large advertisements bring in more inquiries, but not quite in proportion to the larger space. If we take returns from one-page advertisements as equal to 100, half-page advertisements bring returns equal to around 60, and quarter pages produce returns equal to around 33.

(3) Color in advertising—four-color advertisements bring about 50 per cent more returns than black-and-white advertisements.

(4) Position and inquiries—the data indicate that with the exception of cover positions, differences in returns due simply to location within an issue are very moderate. Advertisements within the first five per cent of pages at the front and within the last five per cent of pages at the back attracted around 40 per cent more inquiries than advertisements located in the middle of an issue.

(5) Our present data indicate no significant difference in the number of replies received, whether an advertisement is located on a right-hand or on a left-hand page.

Could the supermarket boom be leveling off? According to a report released at the mid-year conference of the Super Market Institute, sales of new supermarkets opened in 1958 averaged a nine per cent drop blow the average sales for new markets opened in 1957.

Nearly two out of three new markets are doing less business than anticipated, in some cases a substantial 44 per cent below anticipation.

Sales per square foot in the new units average

more than one dollar below the 1957 average of $3.77.

Better than nine out of 10 new markets faced competition from one to 10 other markets.

Advertisers are wasting hundreds of millions of dollars by exciting consumer interest without taking advantage of it at the point of sale. That oft-repeated bit of wisdom so widely ignored today by hypnotized advertisers was recently expressed by the vice-president of the display division of the Gibralter Corrugated Paper Company, William P. Katz.

Mr. Katz said, further, "The result of any worthwhile advertising program is realized only at the point of sale. In order to capitalize on the advertising dollar, the advertiser must integrate his campaign with a point-of-purchase display because that is where the pay-off is."

The total output of medicinals is now estimated to be approximately 100,000,000 pounds per year.

According to the Curtis Publishing Company, drug and food stores are outselling newsstands in the magazine field.

Of the eight magazines distributed by Curtis, 37 per cent of the total sales is now made in drug stores and 31 per cent in food stores.

The president of General Foods recently told a meeting of the Security Analysts of San Francisco that the company's 1958 advertising expenditures will top the $87 million level recorded in 1957.

To quote Mr. Mortimer, "The private brands problem requires us to court the consumer even more fervently."

A very interesting comprehensive study of the food supermarket has just been made by E. B. Weiss, director of merchandising of Doyle Dane Bernbach, Inc. of New York, Chicago and California. This very valuable book is available to interested business executives.

Sales volume is a most important factor in determining the rate of expenditures on marketing research. According to a study made by the American Management Association, the companies below $15,000,000 in sales spent 0.5 per cent; for sales from $15,000,000 to $25,000,000, 0.1 per cent; $25,000,000 to $50,000,000, 0.5 per cent; $50,000,000 to $75,000,000, 0.1 per cent and $100,000,000, 0.15 per cent.

According to Warner-Chilcott Labs., doctors treat more than five million persons each year for sinus headaches.

Revlon's new cream, Ultima, is not quite the ultimate so far as price or the technical end of the industry goes. After all, we do have the $100-cream of Estee Lauder, which includes in its formulation just about everything known to cosmetic science that has been reported or reputed to have any degree of cosmetic value.

Nevertheless, Ultima is an ultimate of some sort, because the cream is offered to the hopeful American woman in two sizes, one for $12.00 and one for $20.00, with a small sample size at the trifling sum of two or three bucks.

The cosmetic cream business is now in a fascinating cycle which has probably not yet reached its peak. Up until a few years ago, and for a period of nearly 15 years before that, cosmetic creams were undergoing a substantial decline, not only in volume but in the number of women using such creams and the frequency of use. This has been emphatically confirmed by all newspaper, magazine or professional market research surveys.

By the time the turn in this downward cycle had arrived, cosmetic creams had lost from 20 to 25 per cent of the women using such products.

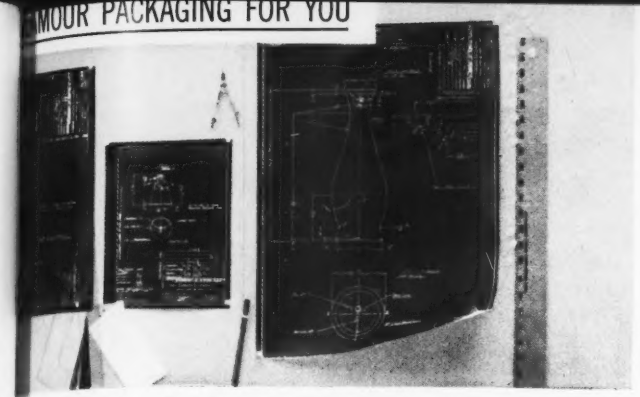
The turn seems to have come suddenly. It was ushered in by a rush of new cosmetic discoveries for use in creams, including such things as hormones, the revival of vitamins, Royal Jelly, minerals and mink oil. In other words, the penetrating so-called therapeutic cream revived this part of the cosmetic business.

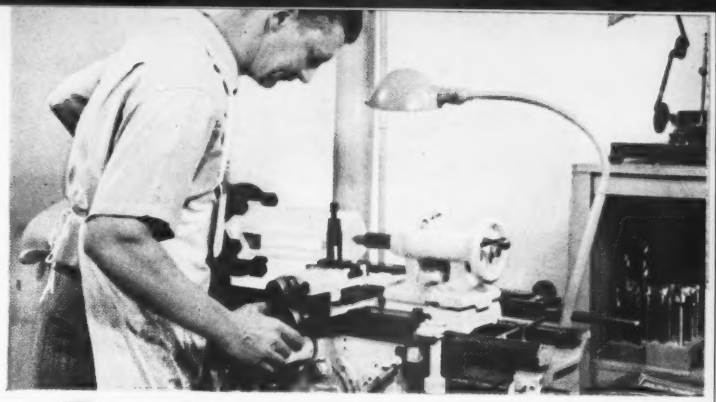
The increase has been substantial, and there is no doubt that Royal Jelly alone has added up to $10 million annually to the sales volume of cosmetic creams. As a matter of fact, last year one of the large treatment houses whose business runs about $11 million a year showed a sales decline in face powder, lipstick and bath preparations, and yet was able to add a million-dollar increase to its business very largely through expanding sales in creams, chief of which was one containing Royal Jelly.

An extremely pleasant aspect of the sales increase in creams is the profit margin it brings to manufacturers. It is now generally recognized that these cosmetic creams of the newer type selling for $5.00 and over are bringing much greater net profit to the manunfacturer than does perfume. In other words, the highest mark-up of a cost in the cosmetic industry. As noted before, there is not the slightest indication that we are at the end of this cycle. The public seems really and truly avid for skin care and willing to pay for it, and we must assume that women have been noticing specific improvements in skin care. Hardly anything else should account for the consistency in the growth of this type of cream and the willingness of the public to pay such high prices.

For this reason, we ought to expect excursions into far and distant fields by our cosmetic chemists in search of additional gold nuggets to add to that precious collection of mink oil, Royal Jelly, and the like.

MOUR PACKAGING FOR YOU





esigned—for beauty and utility

Developed—for high-speed filling

Produced—to attract a woman's eye

These are models of glass containers just "born" in the Owens-Illinois laboratories . . . created by Owens-Illinois package designers in their continuous search for the finest in stylish and functional packaging.

Designs such as these are but a few of the lovely containers which can be produced to carry your toiletries and cosmetics to market . . . to stand out from others and attract milady's eye. A container which is easily handled on your filling line . . . never affects the scent or quality of your product . . . and designed specially and *only* for you is the result of Owens-Illinois packaging experts' broad knowledge of manufacturing, handling, and use.

For the finest in the glass packaging you need, call the Owens-Illinois sales office nearest you.

DURAGLAS CONTAINERS
AN (I) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES • TOLEDO 1, OHIO

NOW! AEROSOLS SPRAY PAIN AWAY

Pharmaceutical aerosols may see next big market break-through!

Right now, pharmaceuticals are the fastest growing of all aerosol product groups. Pressure-packed drugs showed a sales increase of 155% in 1957 over 1956—compared to a 22% increase for all aerosols. A major market break-through seems imminent—for products such as spray-on burn remedies which are now being marketed, and for a host of other pharmaceutical products which have yet to be put up in aerosol form.

Right now's the time to plan on capturing *your* share of this market. And while you're considering aerosol packaging for your medicinal product—*or any other product* that can be sprayed, poured, brushed, dusted or daubed—General Chemical can be of real help to you in many different ways.

Help in making and marketing

As a leading producer of aerosol propellants, General Chemical offers many helpful services to present and prospective aerosol marketers.

Advanced research in our aerosol laboratories has led to the development of typical formulations for a number of new aerosol product ideas. For example, *Product Information Bulletins* are available now on such new aerosol pharmaceuticals as Athlete's Foot Medication, Burn Remedy, External Analgesic, Nasal Relief Spray, Neomycin Spray and Foam, Poison Ivy, Oak and Sumac Remedy, and Medicated Hand Lotion. Write for free copies of any or all, and ask to be put on our mailing list for new *Bulletins* as they are developed.

We will also be glad to put you in touch with highly capable contract fillers, who can put up small runs for you or handle full-scale commercial production. They will work with you from planning and testing through to volume filling. You don't have to invest a cent in equipment or production personnel when you work with these contract fillers!

General Chemical services include:

New Product Ideas

Technical Literature and Market Data

Technical Assistance with Product Development and Formulation

For further information—or if you would like to arrange for a special presentation—write today to "Genetron" Dept., General Chemical Division, Allied Chemical Corporation.

genetron®
aerosol propellants

Putting the "push" in America's finest aerosols

Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N. Y.

P. S. We had just dictated the above when an advertisement came in for *Beauty Fashion* "announcing . . . a great French beauty discovery!" which is scientifically formulated with embryonic fluids, deep-penetrating cell-and-tissue treatment, and sells for 1 1/3 oz. at $12.50, 3 1/2 oz. at $22.50 and 10 oz. at $45.00.

Here is an extract from the speech of a top supermarket executive, showing his attitude toward manufacturer's salesmen and some of the sales and advertising policies of manufacturers that are fairly typical of what is often being said in the retail trade today.

"Frequently the salesman is characterized as the 'man in the grey flannel suit.' Bad habits have been acquired during the period of easy selling, merchandise scarcity, and allotments. Too often deals are presented to buyers in a condescending attitude, giving the impression that the buyer should consider himself fortunate in being allowed to participate in the promotion. All too frequently the salesman, in presenting new merchandise, does not give full information as to what the merchandise will do, case weight, freight rates, etc. Extent of local advertising is sometimes misrepresented. With the advent of the buying committee, we retailers need to know the full story.

"And many times the attitude of the salesman only reflects the attitude of the company which he represents. In such a case the salesman is not to be blamed. Some companies plan to present their promotions directly to the customer, spending millions for TV clowns, and radio and magazine advertising without giving much thought to local and co-op advertising. These companies believe that they can create such a demand and acceptance for their products that it will be absolutely necessary for a retailer to stock and feature their products, and accept their coupons to force distribution.

"This by-passing of the retailer is a serious mistake. The retailer is more than just a spoke in the distribution wheel. To obtain maximum results, the cooperation of the retailer is needed, too. Enthusiastic sales promotion at the local level, supported with newspaper advertising and 'in-store' display, will create more sales than the method used by some manufacturers in by-passing the retailer."

Some new systems seem to be emerging to help manfacturers get a little sane thinking into the appalling muddle retailers have created for newspaper cooperative advertising. These new systems completely avoid deceptive practices by retailers on newspaper rates or various charges for overhead in their own department, as well as the other gimmicks that have been developed to nick the long-suffering newspaper advertiser.

The first new plan we have seen is being applied by a cooperative group of manufacturers in the hardware field. In this system the retailer is given a self-addressed envelope for mailing back to the cooperative group of manufacturers. This envelope contains the proper newspaper mat for the kind of advertising any one of this group wishes to do.

If the retailer wants to advertise, he gives this envelope with the mat to the newspaper, which then remails the envelope with six proofs of the cooperative advertising. The cooperative group then sends the retailer a check covering one-third of the national rate on record for that newspaper. The retailer can then pay the newspaper according to its local rate, whatever that may be.

Another plan suggested at a recent meeting of the A.N.A. is based on a simple rule that a manufacturer will pay a price fixed by him according to the national rate on any newspaper. For instance, a manufacturer may say to a retailer, "If you run a thousand-line ad in such and such a newspaper, we will contribute $300 to it. We do not care what rate you pay, so long as we are not required to pay more than $300. If you run a thousand-line ad and bill us at 40 cents a line, we will pay 75 per cent of this bill or, better still, simply bill us for the thousand-line ad at $300 flat."

Bristol Laboratories is making a test to see whether physicians want their drug product information without embellishments.

A series of black and white advertisements in medical journals will give full factual information on their antibiotic drugs, including Tetrex. The copy will look like a review article in a scientific journal, is objective and informative but free of strong claims.

When R. H. Noel, Bristol's director of sales promotion, was asked if this were a "soft sell," he replied, "Not soft sell, sane sell. Our aim is to provide meaningful information for the physician, and that is all. This information is objective and as complete as space permits. But the decision, the choice of agent and the control of therapy must remain where it has always been, in the hands of the individual physician."

Pfizer has a medicine taster. In a long feature article in the *World-Telegram* of New York, Mrs. Shirley Morabito told how she tasted all medicines for flavor. "I usually swallow a little of each new preparation myself just to be sure it has no unpleasant aftertaste in the back of the throat." By means of a panel of 40 workers, flavors for all Pfizer's medicines are appraised.

According to Mrs. Morabito, "The taste test is the last step in research. No matter how beneficial a new medicine may be, it has to taste right today to win public acceptance. If people won't take it because they dislike the taste, it can't do them any good." The average person can detect a bitter taste in one-fifth of an ounce of caffein mixed in a quart of water. Mrs. Morabito can detect the same amount of caffein mixed with 25 quarts of water.

424...408...369. These three bottles are likely candidates for any popularity contest because they meet all requirements so admirably. They have both beauty and versatility as well as particular appeal to cost minded merchandisers. All can be supplied plain, or decorated to your specifications.

GLASS STIMULATES SALES

CARR-LOWREY GLASS CO.

Designers and manufacturers of fine glass containers

Factory and Main Office: BALTIMORE 3, MD. • New York Office: 415 MADISON AVE. • Chicago Office: 1572 MERCHANDISE MART

News in Packaging . . .

Collapsible Metal Tube Volume Takes Upward Turn

Despite a recession drop in tube shipments and the initial impact of aerosols on the demand for collapsible metal tubes in 1958, the Collapsible Tube Manufacturers' Council reports that it was another billion-unit year. December shipments were 6.5 per cent over those of December 1957, and are expected to continue to increase. Eighty-three per cent of the total in 1958 was used to package drug trade items, 51 per cent being for dentifrices—a slight decline over the proportion in 1957 attributed to the initial impact of aerosol tooth paste containers.

Packaging Research Inventory

Results of an American Management Association packaging research project will be published in time for the AMA national packaging exposition from April 13-17. A bound book of more than 200 pages entitled "Packaging Research: An Inventory," it will contain a bibliography of post-World War II publications in the broad field of packaging.

Improved Plastic-Coated Glass Packages Introduced

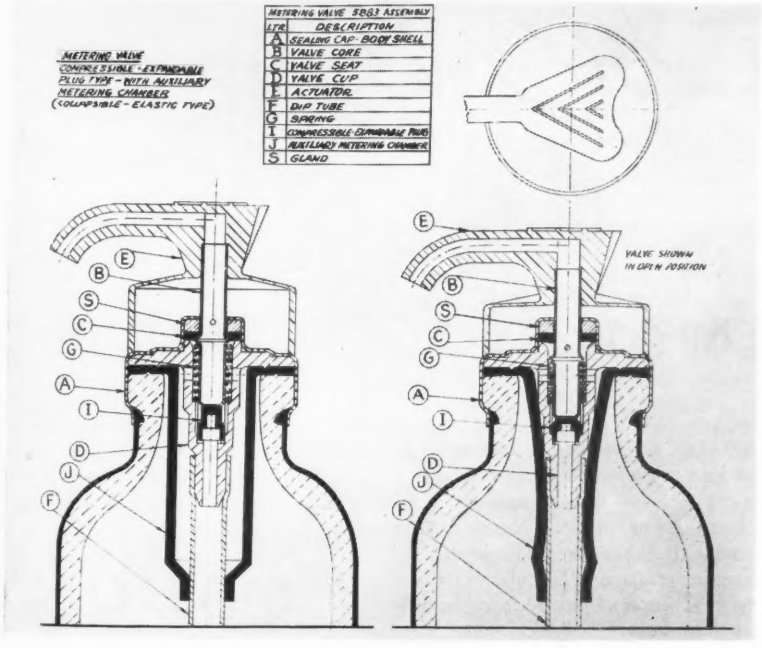
Owens-Illinois has introduced a new improved plastic-coated glass pressure package, in which the glass and plastic become as one. Packages for both liquefied and compressed gasses of the Freon and Nitrosol varieties are available, and the company is prepared to produce a variety of shapes, sizes and a wide range of brilliant stock, as well as individual colors, printed in one or two colors.

Increase in Aerosol Use Predicted

Speaking at the Central Regional Conference of the Pharmaceutical Manufacturers Association in Chicago, Morris J. Root, technical director of G. Barr and Company, reported that scores of pharmaceutical products improve in function by being packaged in aerosol form. The volume of pharmaceutical aerosols has recently taken a major uptrend, he said. The one and one half million aerosol drug units produced in 1955 quadrupled in 1957, and may, according to Mr. Root, reach 17 million units in 1959.

Geralin Dietary Supplement *(above)* by Walker Laboratories Division, Vick Chemical Co., now in a re-usable opal glass apothecary jar by Hazel-Atlas Glass Division, Continental Can Co. Easily removable label by Westchester Printing; closure by Gutman. *Below:* Owens-Illinois Glass Company's lighter weight gallon packer with a built-in glass handle for easier handling for women pharmacists and technicians holds 128 oz. Has slightly depressed label panel, is more economical and reduces shipping costs.

Risdon Manufacturing Company's new large-capacity "universal" metering valve usable with all propellants. At left, valve is closed, at right, open. Auxiliary metering chamber (J) of highly aerosol-resistent rubber surrounds main chamber. When actuated, downward thrust of core (B) expands valve's compressible-expandable plug (I) sealing off the measured amount, and dispenser opens. The Magna-Meter is first the large-capacity valve for all propellants, including nitrogen, and it also works with water-based aerosols, in foam, spray or liquid form in amounts from 0.150 cc. to 2.5 cc.

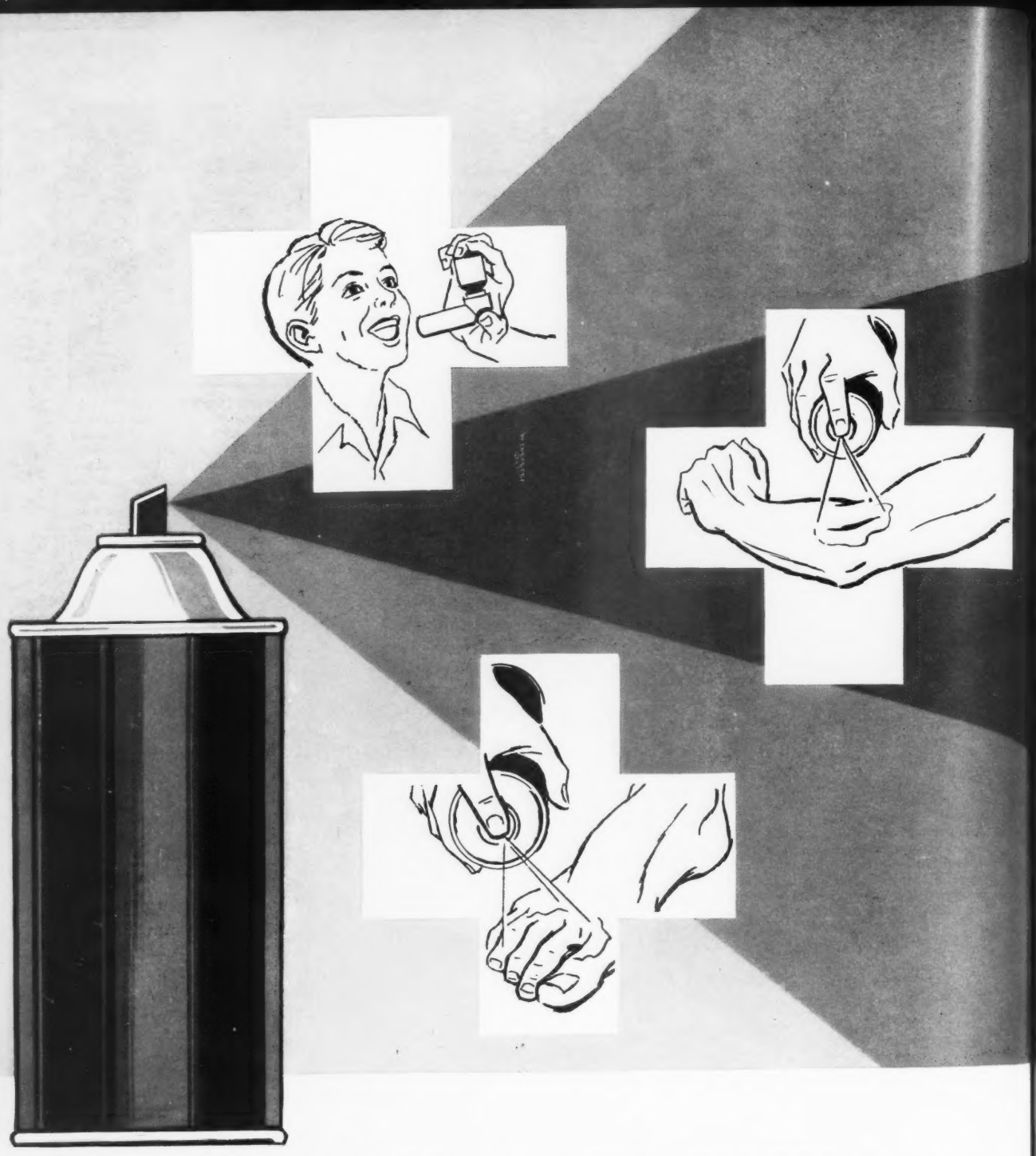


Rochas Packages U.S. Made

Marcel Rochas has introduced his first two American-packaged aerosols, Femme and Moustache. Each is bottled in plastic-coated glass by Wheaton with a Risdon Micro-Mist valve and actuator, and is available in four-ounce and seven-ounce sizes. Aerosol Packaging does the filling. Aerosols by Rochas have been packaged previously only in France. The package shapes, designs and colors are similar to those from France.

Material Handling Exposition

The Material Handling Institute's 1959 exposition to be held June 9-12 will be concurrent with technical sessions sponsored by the American Material Handling Society, Inc., with the cooperative endorsement of the Society for Advancement of Management and the American Society of Mechanical Engineers. Management, engineering and applications techniques will be covered.



Newest packaging idea in a $187,000,000 market

How big is the pharmaceutical market? In 1957, $187 million worth of drug and pharmaceutical products were sold, not including $1.7 *billion* worth of prescription items. In these markets aerosol sales are gaining rapidly. They amounted to $9.3 million in 1957, almost a 300% increase over 1956. Aerosols have made a major breakthrough in pharmaceuticals after revolutionizing sales for hair fixatives, colognes, insecticides and a host of other products.

The reasons for this success are simple. Aerosols deliver the product in a completely new form that's easier, more effective and often more economical to use. If your product can be brushed, poured or sprayed, you stand a good chance to add new sales appeal—create vast new markets—if you package it in an aerosol.

It is not necessary to set up your own packaging line to enter this field. A custom filler near you has the knowledge and equipment to help. He can package your formulation for testing and help you in all phases, from planning through production.

If you don't know the name of a custom filler, write Du Pont. We'll send you a list and include survey data on your market for aerosol products, plus information about Freon* propellents for aerosols. "Freon" is preferred by custom fillers and is used in more of today's aerosols than any other propellent. Write: E. I. du Pont de Nemours & Co. (Inc.), "Freon" Products Div. 343. Wilmington 98. Delaware.

Best-selling aerosols are powered with

FREON®
PROPELLENTS

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

*Freon and combinations of Freon- or F- with numerals are Du Pont's registered trademarks for its fluorinated hydrocarbon propellents.

NEWS and VIEWS

BY TED KLEIN, PUBLIC RELATIONS DIRECTOR*

Pillar of Salt

When Lot's wife looked back to view the Lord's destruction of the evil city of Sodom, she was turned to a pillar of salt (Genesis 19:26). In the world of pharmaceutical promotion, the company who looks back to see how a competitor is doing often suffers a similar fate.

A case in point concerns two large companies, both racing to put out a new drug similar in most ways. The company that reaches the market "the fustest with the mostest" will have the advantage of a market as yet untouched by another. The concern that spends a great deal of time worrying about what the competition is doing, or wondering when would be the best time to introduce its product, usually gets left at the starting gate.

Such looking backward is only indulged in by those more interested in where they have been than where they are going. The monuments in salt continue to dot the business landscape. Why keep looking back?

Our Health

Few would think of disputing the statement that our nation enjoys about the best health of any in the world. However, recently released figures from the U. S. National Health Survey provide some rather startling information about our nation's health. They also make one wonder what the state of health must be in less healthy nations.

For the year July 1957 to June 1958, over three billion, three hundred and sixty-nine million days were "restricted activity days" when illness played a part. Of that number one billion, three hundred and ten million days were spent in bed as a result of disability. Almost six hundred million work days were lost, and about three hundred million days were spent away from school as a result of illness.

Projecting this information, the average individual in this healthy country spent about 7.8 days in bed last year as a result of some illness, and 10 days away from work due to "restricted activity" or to bed disability.

Men have slightly better health than women do, since only 6.9 days were disability days for the male, compared to 8.7 days for women. City dwellers lost three hundred and eighty million days from work compared to the heartier farm folk, who lost only 79.9 million. (But there are far fewer farmers in the nation than city residents.) When you compare average days lost, farmers stayed away from work slightly more than two days longer than did their counterparts in the city.

During this same period there were about eight hundred and ninety million physician visits, not including visits by physicians to hospital patients. Taking the number of practicing physicians at one hundred and sixty-five thousand, then, the average MD made five thousand, three hundred and ninety-three visits in a year.

Squibb on the Air

The problem of getting postgraduate information to physicians constantly vexes medical educators. The busy physician just can't take much time to keep abreast of the fast-moving changes in medicine, yet he feels a moral and professional responsibility to keep informed.

One of the most effective means to help the doctor keep up-to-date has been discovered by E. R. Squibb & Sons. Still in the experimental stage, nonetheless it looks to this reporter like a real advance in communication.

According to Jim Shannon of Squibb, it involves the use of special FM radio hookups set up for physicians at 23 hospitals in New York, Massachusetts, New Hampshire and Vermont. Over a two-way hookup, expert physicians in six eastern medical schools both lecture and answer questions from physicians in any of the reception points.

The Rockefeller Foundation has contributed funds for the construction of an FM radio station (WMAC) at Albany Medical College, where the programs originate. Under the general supervision of Dr. Frank M. Woolsey of the college, the programs are prepared weekly for about six months of the year. Attendance is taken and AAGP credit is given to those physicians who fill out slips. To date, some 800 doctors have attended one or more of the radio conferences.

Merck of Merck

One of the most difficult jobs a man can take is one which requires him to work for his father. I know of many who have taken a job with Dad and, in a short time, were unable to endure the continual pressure of some in the firm who thought that all they had for getting and keeping the job was their names.

Albert Merck, son of the late George W. Merck, began working for his father after graduating from Harvard and having served four years with the Army in World War II. He spent 12 years with the company, working his way up until recently he was appointed assistant to Henry W. Gadsden, vice-president of Merck & Co., Inc. In his new job, Al will be responsible for corporate marketing problems.

He has demonstrated to one and all that he can not only survive in the company, but also be promoted on the basis of his ability and performance.

I think he best expressed his ideals in a recent talk to the Pharmaceutical Ad Club of New York. Addressing himself to the role advertising plays in this business he said, "I believe advertising must sell, but I also believe that, if we adopt the philosophy of 'Who cares, as long as it sells?' we sell ourselves down the river in the process, and advertising along with it." Let's hope Mr. Merck will keep this promise in his new job.

Albert Merck, newly appointed assistant to the vice-president of Merck & Company.

*Paul Klemtner & Company, Inc.

There's nothing like a new hat

to pick up the spirit and add beauty to the wearer.

And there's nothing like a new Goldcôted Richford Basket-Weave Cap to transform ordinary jars and bottles into radiant, sales-winning containers for your products.

RICHFORD CORPORATION

Offices and Plant:
3618 Oceanside Rd.
Oceanside, N. Y.

Showrooms:
Empire State Bldg.,
350 5th Ave., N. Y., N. Y.

Colonial

for

PRECISION ENGINEERED

Plastics

"Precision in plastics" is more than a mere sales expression at Colonial Applicator Company. It is a day-to-day reality made possible by unexcelled craftsmanship and the most rigid adherence to your specifications.

Stringent quality control insures top performing plastics. Each dropper and assembly is the best that man and machine can produce.

Let our technicians make free samples to your most exacting specifications. Contact a Colonial representative listed below or write to us directly.

Specialists in Glass or Plastic Droppers
and Assemblies for Nearly a Quarter of a Century

Represented by:

CHARLES E. SCHWAB
122 E. 42 St.
New York 17, N. Y.
OXford 7-0760

ALLEN J. GRETSCH
327 LaSalle St.
Chicago 4, Ill.
WAbash 2-1619

HARRY M. GRABER
811 S. 53rd St.
Philadelphia 43, Pa.
GRanite 6-6311

GABLER & GABLER
435 S. LaCienega Blvd.
Los Angeles 48, Cal.
BRadshaw 2-2995

RICHARDS GLASS COMPANY
102 Atlantic Ave.
Toronto 3, Canada
LEnox 2-3311

COLONIAL APPLICATOR CO.

VINELAND, NEW JERSEY

Patent thoughts and trends

BY THOMAS CIFELLI, JR., PATENT ATTORNEY*

Briefs

There is no possible way of learning how much money is actually made on patents. Principal ways in which such money is made include manufacturing operations, sales of the patents, royalties and the like. The figure must be astronomical. The U. S. Department of Commerce recently released figures which show that foreign firms alone paid U. S. firms over $140,000,000 in 1957 under patent licenses. One must remember that this area is a very small part of the total picture.

A U. S. District Court recently held that the government could not refuse entry of goods bearing the "Zeiss" trademark. The decision was based on the elementary trademark principle that in this country ownership and rights to the exclusive use of a trademark flow from *adoption* and *use*, and not from mere *registration*. Also, trademark rights cannot be transferred except in connection with a going business. The Court ruled that the mere existence of the corporate name "Carl Zeiss, Inc." constitutes no justification for refusing entry of goods under the "Zeiss" trademark.

The Patent Office is making strenuous efforts to improve its operations. One of the things it has done in this connection is to set up punched-card files of prior art compounds in the steroid field. In cooperation with the Pharmaceutical Manufacturers Association, the Patent Office is now making available for distribution punched-cards pertaining to those steroid compounds described as new in a large segment of the current non-patent literature. The coding system is said to be fully compatible with that of the already-issued steroid cards for the patent literature. The coverage of the literature is only from January 1958, but is to be kept current in the future.

Senator O'Mahoney, chairman of the Senate Judiciary Sub-Committee on Patents, Trademarks and Copyrights, recently announced the publication of a study entitled, "Renewal Fees and Other Patent Fees in Foreign Countries," written by P. J. Federico, a prominent official of the Patent Office and outstanding scholar on our patent system.

The study gives the renewal fee laws of the 23 most important countries which require such fees from patentees. The report gives the fee schedules, along with other related information. Special attention is given to England, Germany and France. It should be remembered that the United States and Canada have no renewal fee provisions in their laws. Mr. Federico's study traces the history of efforts to obtain similar laws in the United States and contains a draft of possible legislation on the subject.

Senator O'Mahoney also announced recently the publication of a study entitled, "Synthetic Rubber; A Case Study and Technological Development Under Government Direction." Also released were two other reports, "Patent Practices of the Tennessee Valley Authority," and "Patent Practices of the National Science Foundation."

Copies of the reports may be obtained from the Superintendent of Documents, Washington, D.C.

Copywrights vs. Patents

One of the saddest tasks of a patent attorney is to have to advise a client that the client has forfeited his rights to protection because of a technical slip-up. Examples of such slip-ups in the patent field include selling the product for more than one year in this country before applying for a patent, or waiting for more than one year after publishing a disclosure on the invention before applying for a patent; and postponing of foreign patent applications until after the U. S. patent is published. In cases such as the latter, patent rights in many countries are lost.

The patent field is not alone in having pitfalls. The allied field of copyrights has its share also. It would not be accurate to term the pitfalls as traps because patent and copyright laws are few and simple. It is just a matter either of ignorance of the law or carelessness, that is, forgetfulness.

This matter was brought vividly to the attention of the writer the other day. A brochure on an electronic device was received from a client with the request that the subject matter be copyrighted. The work obviously was of the highest order from the point of view of paper stock, lay-out, textual matter, photographs, and so on. Nevertheless, the writer had to inform the client that no copyright protection was available because the client had failed to put the simple statutory copyright notice on the brochure in the proper place, *prior* to the distribution of the brochure.

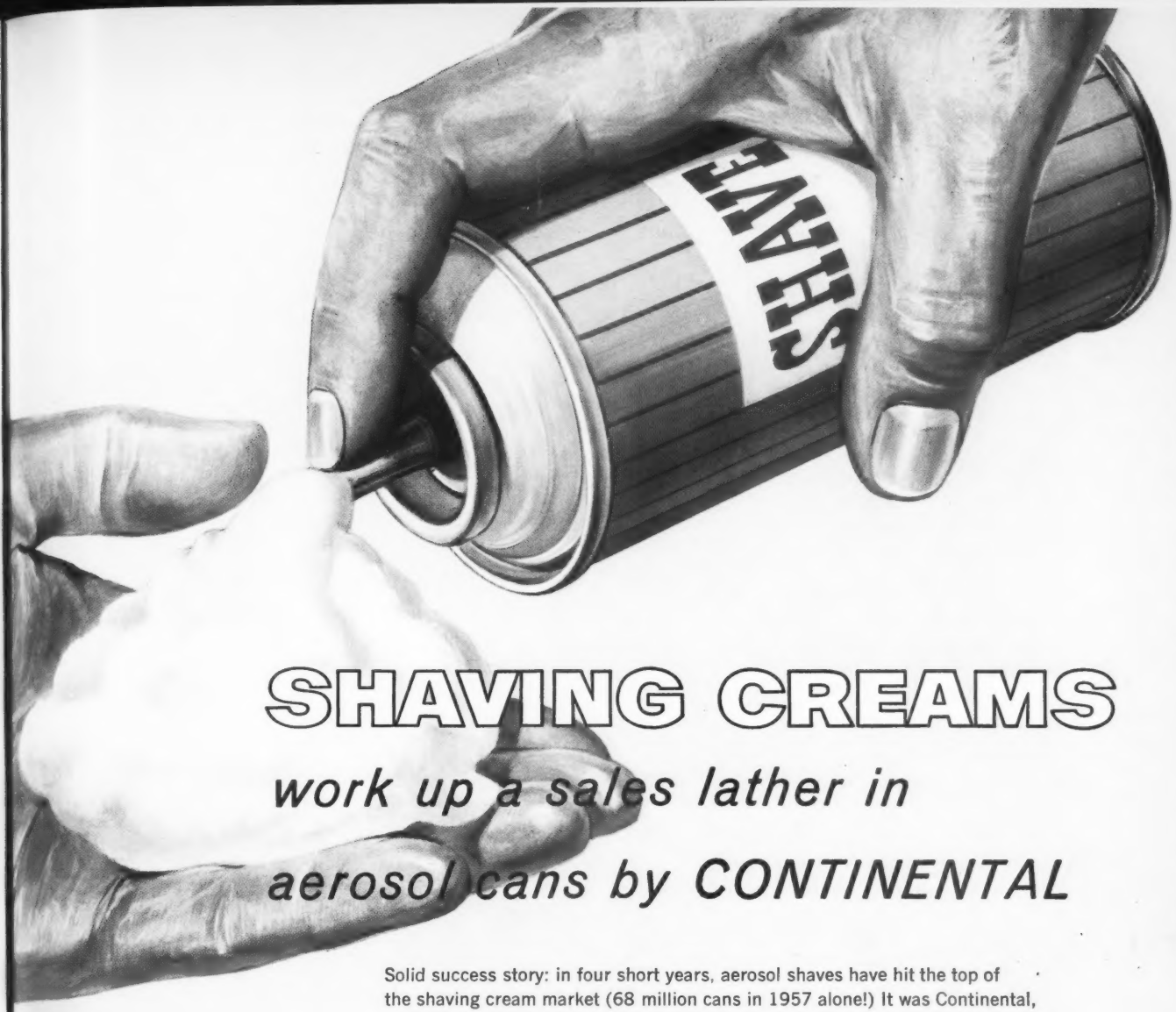
Since the issuance of such circulars and brochures is a common occurrence, and since there is so much misinformation about the simple copyright principles, it is felt that a brief exposition on copyright principles, accompanied by a comparison with patents, is in order.

What is a Copyright?

There are really two kinds of copyrights: the right *before* publication to decide whether to publish or not and also to restrain unauthorized publishing; and the right *after* publication to prevent others from making copies of that which has been copyrighted. The first right, that is the right of copyright prior to publication, is referred to as the common law copyright, as distinguished from the statutory copyright which is the second type. In what follows we are dealing mainly with the second type of copyright.

Statutory copyright has been defined as an exclusive property right granted by statute to an author of an intellectual production, for a limited term of years, to multiply and distribute copies of his work and to engage in the other activities prescribed by the statute in relation to

*Richards and Cifelli, Newark, New Jersey.



SHAVING CREAMS

work up a sales lather in aerosol cans by CONTINENTAL

Solid success story: in four short years, aerosol shaves have hit the top of the shaving cream market (68 million cans in 1957 alone!) It was Continental, remember, who developed the low pressure aerosol can that started this phenomenal market on its runaway path. For your shaving cream, you can't do better than a Continental aerosol, superbly lithographed by Continental experts. Precision-made Continental aerosols are most economically priced. Take your pick from eight sizes and many different styles. You get fast delivery of all the aerosols you need from Continental's greatly expanded production facilities. Research and engineering services are available, plus introductions to valve suppliers and commercial fillers. For aerosols with solid sales power, call Continental today.

CONTINENTAL MAKES AEROSOLS FOR EVERY USE... IN THE WIDEST RANGE OF SIZES

CONTINENTAL CAN COMPANY

Eastern Division: 100 East 42nd Street, New York 17
Central Division: 135 South La Salle Street, Chicago 3
Pacific Division: Russ Building, San Francisco 4
Canadian Division: 5595 Pare Street, Montreal, Que.

PAINT | INSECTICIDES | SPRAY BANDAGES | FRAGRANCE | DEODORANT | HAIR SPRAY | SHOE POLISH | ANTISEPTIC

NEW FORMULATION SERVICE . . . most up-to-date of its kind in America, to help fillers and marketers develop new aerosols, modernize older ones, profitably!

ALL REPRESENTATIVES TECHNICALLY TRAINED . . . you'll enjoy dealing with men who know aerosol markets, understand production problems.

ON-TIME DELIVERY of the quantity you need, from a nationwide network of distribution points.

YEARS OF EXPERIENCE back the high quality of UCON Propellants . . . and the technical assistance now available to you.

CARBIDE has long been active in emulsion technology, surface-coating technology, silicones, solvents, and the manufacture and handling of gases . . . all associated with the aerosol industry. Thus, UCON Propellants are a logical extension of CARBIDE's research and development programs.

For more information, write: UCON Propellants, Union Carbide Chemicals Company, 30 East 42nd St., New York 17, N. Y. Call, write or wire us, today! Attention, Dept. B-3.

UCON and UNION CARBIDE are registered trade marks of Union Carbide Corporation.

UNION CARBIDE CHEMICALS COMPANY
Division of Union Carbide Corporation

UNION CARBIDE
Ucon
BRAND
propellants

UCON Propellants are available in five grades

UCON Propellant 11 Trichloromonofluoromethane
UCON Propellant 12 Dichlorodifluoromethane
UCON Propellant 22 Monochlorodifluoromethane
UCON Propellant 113 Trichlorotrifluoroethane
UCON Propellant 114 Dichlorotetrafluoroethane

the subject matter of the grant. In this country the term of years is 28, renewable for a like 28-year period. It will be recalled that the patent term is 17 years and is not renewable, except by act of Congress. Authors and composers, it is seen, are preferred over inventors.

Matter Which Can Be Copyrighted

The following represents a listing, taken from the copyright law, of the subjects which may be copyrighted:

Books,
Periodicals, including newspapers,
Lectures, sermons and addresses (prepared for oral delivery),
Dramatic or dramatico-musical compositions,
Musical compositions,
Maps,
Works of art, models or designs for works of art,
Reproductions of a work of art,
Drawings or plastic works of a scientific or technical character,
Photographs,
Prints and pictorial illustrations including prints or labels used for articles of merchandise,
Motion picture photoplays, and
Motion pictures other than photoplays.

How To Secure Copyright

The statute provides that as to published works, copyright is secured by publication thereof with a notice of copyright, and the notice is to be affixed to each copy published or offered for sale in the United States.

The two items which give the most trouble are the meaning of the word "publication" and the copyright notice. With respect to publication, the date of publication is usually taken to be the earliest date when copies of the first authorized edition were placed on sale, sold, or publicly distributed by the proprietor of the copyright or under his authority. Generally speaking, the normal way of effecting a publication is considered to be meant by the word "publication" in the statute. However, what amounts to a publication may vary with the nature of the work. Thus, what would amount to publication in the case of a picture would not necessarily constitute a publication in the case of a book. Furthermore, the law makes a distinction between a limited publication and a general publication. Publication within the meaning of the copyright law means a general publication. Thus, the delivery of lectures before classes of students where the students are given permission to take notes does not constitute a general publication and thereby a dedication of the lectures to the public.

Perhaps the most common pitfall in the entire copyright field is the failure to comply with the notice requirements of the statute. As already stated, the notice should be on the printed matter *before* publication. Also care must be followed in using the correct notice. For printed literary, musical or dramatic works, the notice should read "Copyright" or Copr." followed by the year in which the publication is effected and the name of the copyright owner. For example the notice in such cases should read "Copyright 1959 by John Brown."

With respect to books or other printed publications the *place* where the copyright notice should appear is also fixed by statute, and strict compliance is advisable. The notice should be on the title page or the page immediately following, or, if a periodical, either upon the title page or the first page of text of each separate number; or, if a musical work, either upon its title page or the first page of music. One notice of copyright in each volume or in each number of the newspaper or periodical published suffices.

Aren't these requirements as to the notice simple? Nevertheless, the writer has on more than one occasion been told by some of his clients that printers have objected to putting the copyright notice at the prescribed places, sometimes preferring to put them on the last page of the book. In defending their position the printers have said that they have been doing it that way for years!!

Registration of Copyright

As already seen, the actual legal right to copyright occurs upon the publication of the work with the prescribed notice. Nevertheless, the copyright owner is required by law to deposit "promptly" in the copyright office two complete copies of the best edition then published. If no deposit is made, the Register of Copyrights may make a formal demand for deposit; and failure to comply may results in the forfeiture of the copyright, together with a fine of $100, plus double the amount of the retail price of the best edition of the work. In one case involving the well-known Drew Pearson, the U. S. Supreme Court held that deposit 14 months after the date of publication was valid. Nevertheless, prompt deposit in fact is believed to be desirable in all cases.

Infringement of Copyright

While the law gives the copyright owner the exclusive right to print, reprint, publish, copy and vend the copyrighted work for a 28-year period, renewable for another 28-year period, there are some limitations on this right. For one thing, unlike the situation in patent law, the copyright owner must show that the alleged infringer had actual *access* to the copyrighted work. In other words, if someone independently creates a similar work or, conceivably, an identical work, there is no recovery against such a person. In patent law, the patent owner does not have to show that the alleged infringer even knew of the existence of the patent. In copyright law, one of the best ways of showing access is to be able to show that the alleged infringer even repeated the errors in the original work. It has been said that map makers intentionally make minor errors so as to trap the unwary infringer.

Another point on which the copyright and patent laws differ is that the public has the right to make what is called a fair use of the copyrighted matter; whereas the public is not permitted to make, use or sell any of the patented subject matter. That is to say, if a patent covers hundreds of compounds, the alleged infringer can not avoid liability by merely saying that he only made one of the compounds.

No definition of what constitutes fair use would be all-inclusive. What is fair use in one case may amount to piracy in another. Certain portions of a book may be copied for purposes in instruction by a teacher. The purpose of the borrower is to be considered in determining whether fair use has been made. Greater latitude is allowed authors who make references to texts than is permitted compilers who consult

(*Continued on page 393*)

A MUST IN EVERY FACTORY

For Buying, For Reference

The 14th edition of this valuable directory and reference book is now available. Complete Trade Directory, Trade Name Directory of Suppliers, formulas and special articles, trade associations, statistics and other trade data.

364 pages $4.00 in U.S.A. $5.00 Foreign

BOOK DEPARTMENT

DRUG & COSMETIC INDUSTRY

101 West 31st St., New York 1, N. Y.

OLAK'S RUTAL ORKS INC., MIDDLETOWN, N. Y.

AMERSFOORT, HOLLAND · PARIS, FRANCE · BREMEN, GERMANY · BRUSSELS, BELGIUM · SOFLOR LTD. - PERIVALE, ENGLAND

Soggy, but still potent with our dry **vitamin A**

The uncoated tablet on the right has soaked up so much moisture that it weighs 20% more than the control tablet on the left.

It has just spent 60 days under the extreme condition of 79% relative humidity, at room temperature.

Yet the vitamin A content of this water-logged tablet was found to be a heart-gladdening 96% of its original potency.

We get this sort of result consistently in tests with our *Myvax*® *Dry Vitamin A Palmitate*. It seems that when you disperse the built-in stability of the palmitate ester in high-grade gelatin beads as we have done, you really have something.

You have more than stability. The spherical bead form of *Myvax Dry Vitamin A Palmitate* gives excellent resistance to crushing under tableting pressure. Its high potency of 500,000 units to the gram saves space in a dry-filled capsule or tablet. It comes in two standard particle size distributions, medium (30 to 60 mesh) for easy handling and incorporation under most pharmaceutical manufacturing conditions and fine (60 to 120 mesh). If you want vitamin D, we can add it in several potencies.

We believe *Myvax Dry* to be the finest dry vitamin A we have seen; and we think we have seen them all. We shall gladly help you test the strength of this conviction. We supply samples, cooperate in stability tests, analyze the vitamin A content of finished products you make with *Myvax Dry*. You begin by writing ***Distillation Products Industries,*** Rochester 3, N. Y. Sales offices: New York and Chicago • W. M. Gillies, Inc., West Coast • Charles Albert Smith Limited, Montreal and Toronto.

leaders in research and production of vitamin A

DPi

Also . . . vitamin E . . . distilled monoglycerides . . . some 3700 Eastman Organic Chemicals for science and industry

Distillation Products Industries *is a division of* **Eastman Kodak Company**

Stepan Chemical Company's three new officers, from left to right: E. J. Black, vice-president of sales; M. A. Pardieck, vice-president and treasurer; and W. J. Crepeau, secretary, along with his duties as assistant general manager of the firm.

NEWS...

Appointments and Promotions

Albert Aschwanden, who has been export manager for Acme Mercantile Company for the past five years, has joined **Archer-Daniels-Midland Company** as manager of the fats and oils department.

C. Gene Bartlow has been appointed sales manager of the **Rock Island (Illinois) Drug Division of McKesson & Robbins, Inc.** He had been assistant sales manager of the Omaha Drug Division.

John A. Baruch, formerly manager of public relations for Warner-Lambert Pharmaceutical Company, has become advertising manager of the **Ortho Pharmaceutical Corporation.**

F. Kenneth Beirn has been appointed vice-president in charge of advertising, **Revlon, Inc.,** succeeding George J. Abrams, who has resigned. Jack Kauffman has become vice-president, merchandising. He was formerly with Colgate-Palmolive Company. Harvey Kram, who has been associated with Leviton Mfg. Company as director of manufacturing, has been appointed operations consultant to president Charles Revson.

Stepan Chemical Company has elected three officers: E. J. Black, Stepan's sales manager for three years, becomes vice-president of sales; M. A. Pardieck, formerly secretary-treasurer, is now vice-president and treasurer; and W. J. Crepeau was elected secretary. He also continues as assistant general manager.

Robert J. Clark has been promoted from representative of **Colonial Dames Cosmetic Company** in California to sales manager of the firm, replacing Jerry Dalebout, who has resigned.

Paul R. Dohl, who joined **Norwich Pharmacal Company** in 1952 and has served as assistant secretary since 1954, has been elected secretary. He succeeds the late John D. Hayes. Norwich has also made six sales personnel appointments: Robert E. LeBlanc, promoted from manager of the southern sales division to regional sales manager, supervising the southern and southwestern sales divisions; Baxter Thomas, until now district manager in Atlanta, becomes southern division manager succeeding Mr. LeBlanc; George J. Edelen, promoted from sales representative to district manager, replacing Mr. Thomas; Hilton H. Lovejoy, promoted from sales representative to district manager, northern sales division; Rodney S. Buehring, promoted from representative to district manager, west central division; and William C. Holman, district manager, Chicago, now district manager, the southwestern division.

Kenneth Fietz, until now a representative for the New York sales division of **U. S. Industrial Chemicals Company, division of National Distillers and Chemical Corporation,** has become the manager of the company's newly established San Francisco sales office, with offices at 220 Montgomery Street, San Francisco 4; telephone EXbrook 7-3250. Clifford E. Oman, who has been assistant plant manager for the firm, has been appointed Tuscola general manager.

The scientific division of **Lakeside Laboratories, Inc.,** has promoted three: Dr. Harris L. Friedman, from director of laboratories to director of basic research; Dr. John H. Biel, from chief of the medical chemistry section to director of laboratories; and Dr. Harry M. Leyland, director of professional service, who will now also be director of clinical investigation.

Kenneth Fietz (below left), manager of U. S. Industrial Chemicals Company's newly established San Francisco sales office. Dr. Harris L. Friedman, now director of research, Lakeside Laboratories, Inc. Also promoted at Lakeside, Dr. John H. Biel, now director of laboratories, and Dr. Harry M. Leyland, who has become director of clinical investigation along with his duties as director of professional service.

Givaudan originates

exciting new fragrances for your

Creams and Lotions!

Today's trend in creams and lotions indicates a preference for the sophisticated, stylized scents—a trend turning from the conventional to the modern types. And, to insure a first impression of quality and a lasting impression of excellence, your cosmetic requires a fragrance skillfully blended and meticulously chosen.

Givaudan's knowledge and experience can simplify the problem for you. Our creative laboratories custom-create the perfect balance in fragrances . . . scents that fulfill the public demand.

In any perfuming problems—with proper consideration of all factors—Givaudan can originate the unique, exciting fragrance you have been searching for.

GIVAUDAN-DELAWANNA, INC.
321 West 44th Street, New York 36, N. Y.

GIVAUDAN

Left to right: Edward Gelsthorpe, vice-president and director of marketing for Bristol-Myers Products Division; also with that division, F. Harry Fletcher, who has been promoted to the position of vice-president and director of sales.

James W. Hoelscher, manager of market research, the Wallerstein Company, and Lawrence W. Kendrick, formerly a district manager, now field sales manager for Baxter Laboratories, Inc.

Thayer Laboratories, division of Revlon, Inc., has announced the appointment of Stanley S. Furness as director of marketing.

Bristol-Myers Products Division has promoted Edward Gelsthorpe from vice-president and general sales manager to vice-president and director of marketing, and F. Harry Fletcher from vice-president and national field sales manager to vice-president and director of sales.

Eli Lilly and Company has made three executive changes on its engineering staff: Lot Green, director of the engineering division, has become executive director of engineering, a new position; Henry McKinley, who joined Lilly in 1946 as an architectural engineer, has been named director of the engineering staff division; and John M. Webb has been appointed director of the engineering maintenance division. He has been with Lilly since 1935. Other changes at Lilly include: Charles A. Burns, formerly manager of the firm's new Chicago south district, now administrative assistant to the executive director of sales, succeeding William R. Hutchinson, who is now director of sales for the east-central region; Paul N. Harris, M.D., promoted to research associate; and Jack P. Comer, Ph.D., now a control associate.

Bruce A. Gustin, Jr., formerly district manager, Boston, for **Union Carbide Chemicals Company, division of Union Carbide Corporation,** has been promoted to manager, eastern division; George S. Cooper, Jr., a technical representative in the New York district, is now assistant district manager, New York; Theodore J. Hamilton, promoted to district manager, Albany district, was formerly a technical representative in Philadelphia; and James R. Retter is now district manager, Boston. He had been Albany district manager.

Edward H. Herrick has been appointed manager of the **Heyden Newport Chemical Corporation's** Garfield, N. J. plant. Mr. Herrick was formerly area superintendent for formaldehyde and pentaerythritol production.

Lever Brothers Company has elected Milton C. Mumford as president and chief executive officer. He was formerly executive vice-president of the company. T. Edward Hicks, former marketing vice-president of the Pepsodent Division, has become a corporate vice-president of the company with senior staff duties, specifically concerned with expanding toilet goods business in an advisory capacity. Promoted to the position of executive vice-president are Warren N. Burding and Henry M. Schachte, both formerly vice-presidents and directors. Thomas S. Carroll of the **Lever Division,** Mr. Thurm and William T. French have been elected vice-presidents, Mr. Carroll of the **Lever Division,** Mr. French of the **Pepsodent Division.** Within the latter division, four promotions have been announced: Leonard D. Dunlap, formerly sales manager, now wholesale sales manager, a new position; John J. Tuffy, from Philadelphia district sales manager to Los Angeles district sales manager; Jay P. Francis, from Philadelphia sales supervisor, to Dallas district sales manager; and Basil J. Robinson from Boston district sales supervisor to Philadelphia district sales manager.

James W. Hoelscher has been appointed manager of market research for the **Wallerstein Company.** Most recently, Mr. Moelscher has been with the Freeport Sulphur Company.

Charles H. Huber, who has considerable sales experience both in the U. S. and abroad, has been named sales manager of the veterinary division of **Wyeth International Ltd.**

Baxter Laboratories, Inc., has named Lawrence W. Kendrick field sales manager. He was previously district manager, Atlanta, Ga.

Gloria Pages has been named advertising manager for **Dodge & Olcott, Inc.,** to succeed Ruth Kitchen, who is retiring after eight years with the company. Miss Kitchen continues as an advertising consultant to the firm and as editor of the D&O News. Miss Pages has been Mrs. Kitchen's assistant for two years.

Dr. Richard K. Lehne, associate director of technical research since 1957, has been appointed director of research and development for the **Wildroot Company, Inc.,** succeeding Emanual Gundlach, who recently retired. Mr. Gundlach had been associated with Wildroot since 1933. R. Bruce Kideney, with the firm for 40 years, has retired as vice-president in charge of manufacturing.

Edward S. Landreth has been appointed vice-president of **Sterling Products International, Inc.,** and **Winthrop Products, Inc.,** in charge of all operations in Cuba, Puerto Rico, the Dominican Republic and Haiti. Both organizations are subsidiaries of **Sterling Drug Inc.** Mr. Landreth has been with Sterling since 1939, most recently as regional manager of the company's Caribbean markets. The **Sterling-Winthrop Research Institute** has appointed Dr. Eldon D. Nielson as head of the biochemistry and endo-

Left to right: Jacques Masson, newly appointed president of Flam-Haft Laboratories; Don F. Mills, now a member of the sales staff of Givaudan-Delawanna, Inc., and its associate companies, for the New York and Connecticut area; Dr. Donald H. Powers, vice-president for toiletries and cosmetics in the Warner-Lambert Research Institute; and Stuart L. Watson, sales service manager, the S. E. Massengill Company.

crinology section of the biology division. Dr. Nielson was formerly head of the biochemistry department at Armour Pharmaceutical Company.

Audrey Langdon has joined the advertising department of **Air Reduction,** New York, to handle advertising for two divisions, **Air Reduction Chemical Company** and **National Carbide Company.** Miss Langdon was formerly associated with the research and development department, Colgate-Palmolive Company.

John S. Marmaras has been appointed advertising design director at **Ciba Pharmaceutical Products, Inc.** He has been design coordinator for Ciba since 1956. Myrtle Johnson, a designer with the firm since 1952, has succeeded to the position of design coordinator.

Joseph R. Mason, marketing manager of **Sandoz Pharmaceuticals, division of Sandoz Chemical Works, Inc.,** since 1956, has become vice-president of the division.

Jacques Masson has been appointed president of **Flam-Haft Laboratories.** A past president and currently chairman of the American Society of Perfumers, Mr. Masson has been associated with the trade for 20 years.

William F. May, assistant to the vice-president in charge of **Canco Division, American Can Company,** has been elected a vice-president of the executive department of the parent firm. J. Whitney King, who has held executive positions in sales promotion, marketing and advertising since 1939, has become manager of sales promotion and advertising of the Canco Division. David G. Bernard has been named general manager of sales for the division. He had been assistant general manager of the commercial development department.

James L. McKenna has been appointed assistant sales manager and Gus Johnson field sales manager of the **Celluplastic Corporation.**

Johnson & Johnson has added to its board Robert L. McNeil, Jr. and Henry S. McNeil, chairman and president, respectively, of McNeil Laboratories of Philadelphia, which was acquired by Johnson & Johnson in January.

Alcon Laboratories, Inc., has announced the election of David L. Merrill as vice-president. With Alcon since 1948, Mr. Merrill has served most recently as director of laboratories.

Norwood H. Mayer, manager of market research since 1946, has been named director of market research and development for **Parke, Davis & Company.** John A. MacCartney, formerly manager of professional relations, has become director of that department.

Don F. Mills has been appointed to the sales staff of **Givaudan-Delawanna, Inc.,** and its associate companies, **Givaudan Flavors, Inc.,** and **Sindar Corporation,** for the New York and Connectict area. Mr. Mills joined Givaudan in 1958, and has undergone an intensive training program in preparation for his present position.

Heading the new product development department established by **S. B. Penick & Company** is Giles St. Clair, vice-president, with George Motoasca as assistant manager.

Joseph Palmaccio has been appointed production manager of **Organon, Inc.** He was formerly chief of the sterile products division. Kenneth N. Ericson has been promoted from director of clinical promotion to director of professional service; and Richard A. Ulrey, assistant general sales manager, is now sales promotion manager.

Dr. Donald H. Powers has been appointed vice-president for toiletries and cosmetics in the **Warner-Lambert Research Institute.** Formerly director of toiletries and cosmetics in the Institute, Dr. Powers has been with Warner-Lambert since 1949. The Institute has also added to its technical staff: Dr. Max Ben and Dr. Ira Hillyard to the deuartment of pharmacology; Dr. Lester Weinberger and Daniel Kaminsky, the department of organic chemistry; Glenville Watson, the microbiology department; and Joseph Selitto, who is assistant to the director of new product coordination.

Ted Preston has joined **Reed & Carnick** as assistant to L. A. Friedman, vice-president in charge of sales and advertising. Mr. Preston was formerly director of marketing with Sudler & Hennessy, advertising agency.

Stuart L. Watson has been appointed to the newly created position of sales service manager for the **S. E. Massengill Company.** With the firm since 1946, Mr. Watson most recently served as sales administrator.

Eaton Laboratories has reorganized its medical department into two sections, appointing Dr. George S. Rogers director of the section on medical research and professional services, and Dr. Paul J. Christenson director of the section on clinical research. Dr. Rogers has been assistant medical director since 1956, and Dr. Christenson was city health commissioner of Utica, New York, prior to joining the Eaton medical staff in 1957. Dr. Mary F. Paul, for-

Linalool 'Roche' is
uniform — unvarying in
odor — in constant supply
at a stable price —

Linalool 'Roche' is more stable than natural linalool. For existing compounds, we can assist you in adjusting Linalool 'Roche' to simulate natural linalool. Also available is synthetic Linalyl Acetate 'Roche' with an equally high quality odor. 'Roche' Aromatics are available through principal essential oil distributors. AROMATICS DIVISION, HOFFMANN-LA ROCHE INC, Nutley 10, N.J.

NUtley 2-5000

New York City: OXford 5-1400

NEROLIDOL 'Roche'

Now available at attractive price. Serves the same purpose in compounds as the sesquiterpene alcohols in natural oils. Has excellent blending and cohesive properties. Delicate lily-like odor. Can be used as a substitute for farnesol.

GERANYL ACETONE 'Roche'

Completely new, inexpensive material. Has basic rose type of odor, resembling rhodinol formate or geranyl formate, but with good green note. Aldehyde-like top note. Stable in soap.

AROMATICS DIVISION
HOFFMANN-LA ROCHE INC Nutley 10, N.J. NUtley 2-5000
New York City: OXford 5-1400

Left to right: Thomas E. Watson, who has joined Bristol Laboratories, Inc. as manager of market planning; Jerry D. Weber, national sales manager for the new family products department of Chas. Pfizer & Company; Mary R. Welch of the office of finance division, now assistant secretary, Upjohn Company; and Robert Varian, coordinator of new products, a newly established department of Lehn & Fink Products Corp.

merly chief of the biology section, has become senior research associate, and Dr. James A. Buzard, formerly group leader of the biochemistry section, has become chief of the section.

C. A. Smith, formerly account executive for Morse International Agency, has joined **Vick Chemical Company** as sales promotion manager, and D. N. Marshall, former assistant sales manager, has been named manager of sales operations. D. V. Aberg, who was midwestern division sales manager, has become manager of sales operations, while P. J. Bush, former central division sales manager, has become field promotion manager.

Dr. William C. Spring, Jr., former head of Columbia University's Division of Public Health Practice, has assumed the post of associate medical director of **J. B. Roerig and Company, division of Chas. Pfizer & Company, Inc.**

The new vice-president of **Allied Chemical's General Chemical Division** is James W. Swain, succeeding James G. Fox, Jr., who has been transferred to the corporation's **National Aniline Division** as executive vice-president. Mr. Swain has been with Allied for 32 years, and has headed its research and development programs at Morristown, N. J., and Baton Rouge, La., since 1952. Dr. Howard H. Hurmence has been appointed technical director of the General Chemical Division, succeeding Mr. Swain. A member of the organization since 1948, Dr. Hurmence became chief engineer of the division last year.

Thomas E. Watson, formerly of Smith-Dorsey, has joined **Bristol Laboratories, Inc.,** as manager of market planning.

Jerry D. Weber, who has been a professional service representative in the Indianapolis area for **Chas Pfizer & Company,** has been named national sales manager for the new **Family Products Department.**

Mary R. Welch has been appointed assistant secretary of the **Upjohn Company.** The firm's first woman officer, Miss Welch has been with Upjohn for 20 years, in the office and finance division.

Irwin C. Winters, M.D., Ph.D., since 1946 director of clinical research of **G. D. Searle & Company,** has been named to the newly created post of medical director. Concurrent with his appointment, Searle's divisions of clinical research, medical editorship and medical promotion have been merged.

J. Albert Woods recently resigned as president and director of **Commercial Solvents Corporation.** He will continue as a consultant through 1962. Maynard C. Wheeler, senior vice-president and a director, has been elected acting president.

Robert Varian has been appointed coordinator of new products, a newly established department, for **Lehn & Fink Products Corporation.** Mr. Varian was with Revlon as manager of promotion development.

Fielding H. Yost, Jr., manager of **The Dow Chemical Company's** Cleveland sales office, has been advanced to the position of assistant to the director of corporate relations. Thomas M. Gow succeeds Mr. Yost as manager at Cleveland. For six years Mr. Gow has headed plastics sales at Cleveland.

Coutin Moves

Coutin Associates has moved to 118 East 28th Street, New York City 16; telephone, MUrray Hill 3-9057; E. 27th St. freight entrance, 121

TGA Convention Committees

The committees for the 24th annual convention of the Toilet Goods Association to be held at the Waldorf-Astoria Hotel in New York City on May 12-14 are as follows: business program—Paul Carey of Tussy, chairman; John F. Bales of Yardley, Charles F. Junod, Pacquin, and Gerard O'Brien, Caron. The entertainment committee with William R. Kiner of Armstrong Cork as chairman, is made up of Mrs. Paul E. Roehrich, Richford; Jack P. Jordon, Crown Cork & Seal; and Charles H. Milton, Firminich. George A. Holloway of Chesebrough-Pond's is chairman of the Charles S. Welch Award Committee, and Mrs. Estee Lauder, Estee Lauder Cosmetics, is assisting.

SAACI Officers Inducted

James E. Spencer of the Harshaw Chemical Company was recently inducted into office as president of the Salesmen's Association of the American Chemical Industry, Inc., at the organization's annual induction luncheon at New York City's Hotel Commodore.

Other officers for 1959 are: vice-president, George W. Poland, Jr., E. M. Sergeant Pulp & Chemical Co.; treasurer, Preston F. Tinsley, Westvaco Chlor-Alkali Division, Food Machinery & Chemical Corp.; secretary, Stewart Cowell, J. T. Baker Chemical Co.

Replacements on the board of directors include James M. Fergusson, Sumner Chemical Co.; John M. Glaze, Hooker Electrochemical Co.; Paul E. McCoy, American Potash & Chemical Corp.; Frank Reynolds, Publicker Industries; William Wishnick, Witco Chemical Co.; and Walter H. Farley, Chas. L. Huisking & Co.

S. H. Gould Visits the Orient

S. H. Gould, vice-president of the American Pharmaceutical Company, has begun an extended business trip to Japan, Hong Kong, Thailand, Singapore, Burma, the Philippines and Hawaii.

Arthur C. Cope Chosen

Professor Arthur C. Cope, head of the department of chemistry at Massachusetts Institute of Technology and an organic chemist, has been elected chairman of the American Chemical Society's board of directors for 1959. Professor Cope succeeds Dr. Ralph Connor, vice-president of research and development for Rohm & Haas Company, who has served as board chairman for the past three years.

Cholesterol Research Grant Renewed

Lester I. Conrad, vice-president and technical director of American Cholesterol Products, Inc., has announced the renewal of the firm's research grant to the Philadelphia College of Pharmacy and Science. The grant provides for basic and applied research in lanolin fractions and derivatives and their function as emollients.

Hardt Delivers Melendy Memorial Lecture

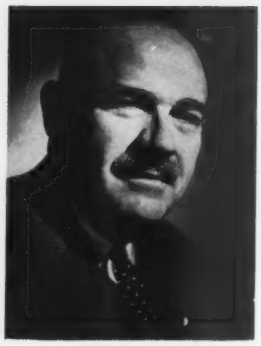
Robert A. Hardt, president of Armour Pharmaceutical Company, recently delivered the annual Samuel Melendy Memorial Lecture at the University of Minnesota College of Pharmacy.

Selection of the speaker is made by vote of the faculty and the American Pharmaceutical Manufacturers Association.

Mr. Hardt is a graduate pharmacist, and a past president of the American Pharmaceutical Manufacturers Association.

Blair Laboratories Enters Proprietary Drug Field

Under the direction of Joseph Daffner, new general manager and director of sales, Blair Laboratories, Inc., entered the proprietary drug field this January. The firm is relocated at 11 East 26th Street, New York City. It will distribute its specialties through wholesale drug outlets.



FAUSTIN J. SOLON

F. J. Solon Retires

Faustin J. Solon, whose 48 years with Owens-Illinois Glass Company has spanned most of the company's corporate history, has retired as vice-president, which position he has filled since 1934. Mr. Solon and his wife are now living in Fort Lauderdale, Florida.

Dr. Guenther in South America

Dr. Ernest Guenther, vice-president and technical director of Fritzsche Brothers, Inc., has flown to South America for a three-month stay during which he expects to make a survey of essential oils. Dr. Guenther expects to visit the firm's affiliate in Buenos Aires, from whence he will make an extensive trip in Brazil, visiting the bois de rose distilleries near Manaus. From there he will go to Peru, Bolivia, Guatemala and Mexico. His reports covering the entire journey will be issued by Fritzsche Brothers as received.

Penick Consolidates

The domestic operating activities of S. B. Penick & Company have been consolidated into three divisions, all three of which carry new designations.

The NYQ Chemical Division replaces the New York Quinine & Chemical Works Division, and will include antibiotics as well as the present line of fine and industrial chemicals.

The Botanical and Allied Products Division encompasses the company's activities in botanicals and derivatives; drug extracts; essential oils, flavor and perfume compounds; and gums spices and the like.

The Farm Chemical and Insecticide Division has added feed grade antibiotics to its previous specialized chemical and insecticide items.

Fred Hope Elected

Fred J. Hope, a research chemist with H. Kohnstamm & Company, Inc., has been elected a national counselor of the American Chemical Society, representing the New York section.

Geigy to Entertain New York Cosmetic Chemists

The New York Chapter of the Society of Cosmetic Chemists has accepted the invitation of the Geigy Chemical Company to hold a meeting at the company plant, with all expenses paid. Dinner will be provided, limousine transportation from New York City, and also a speaker from anywhere in the U.S. on a topic of interest to be approved by the chapter's executive committee. The chemists will tour the Geigy plant as a part of the program.

The meeting is to be held on May 6, at 6:00 p.m.

New TGA Officers

D. H. Williams, assistant to the president of Sterling Drug, Inc., has been elected a vice-president of the TGA, succeeding Robert E. Schwartz of Wildroot Company, who has resigned.

Charles F. Junod, vice-president and advertising manager of Pacquin, Inc., has been elected director, filling Mr. Williams' post, and Paul Bremer, general manager, Christian Dior Perfumes Corporation, is now a director, replacing Owen Stoner, vice-president of Vick Chemical Company.

Gerberding Celebrates

C. W. Gerberding, chairman of the board of Dragoco, Holzminden (Germany), parent firm of Dragoco, Inc., celebrated his 65th birthday on March 14.

During the past 40 years, Mr. Gerberding has brought his company to its present prominence in the perfume and flavor field. His elder son, Carl-Heinz Gerberding, founded Dragoco, Inc., of New York, under the management of Dr. Henry Gribou, vice-president.

F. J. Reid Chosen

At the annual dinner of the board of governors of the Drug and Chemical Club held February 19 in honor of J. J. Magrath, retiring president, Francis J. Reid of E. R. Squibb & Sons was elected president for 1959.

Emulsion Stability Problems? Try

PROMULGEN®

a powerful nonionic emulsifier with effective emollient properties—superior to fatty acid esters – resistant to hydrolytic agents and high salt concentrations over a wide temperature and pH range.

FOR STABLE O/W SYSTEMS

only three basic components required: PROMULGEN, water and a mineral hydrocarbon (mineral oil, petrolatum and/or wax) – emulsion consistency adjustable by increasing or decreasing water content and adding appropriate hydrocarbon.

RESULT?

lustrous white lotions or creams that will not dry out, cake or harden. Your antiperspirant, astringent, deodorant, depilatory or therapeutic preparation will retain its stability, functional effectiveness and attractive appearance.

Product Bulletin on Request.

ROBINSON WAGNER CO., INC.
628 Waverly Avenue
Mamaroneck, N. Y.

More Reasons from ROCHE*

Profitable products are made with **Roche Thiamine** Hydrochloride and Mononitrate (vitamin B_1) that come **right from Roche,** because you get **U.S.P.** purity. (Roche thiamine, in hydrochloride and mononitrate forms, equals or exceeds U.S.P. standards.) You get **regular,** for tablets, capsules, dry and liquid nutritive supplements and multivitamin preparations; and **ampul** (hydrochloride only) prepared especially for manufacture of parenteral solutions . . . you get **service and supplies** you can count on, because Roche produces quality vitamins **by the tons** . . . you get the rewards of **research:** through its world-wide vitamin research Roche is constantly enlarging **vitamin knowledge** and perfecting new vitamin improvements . . . you get completely uniform **quality,** through Roche scientific production control . . . you always get **dependable deliveries** from convenient points. You get **"special-problem attention:"** Roche thiamine mononitrate will, for example, help you **solve stability problems** that sometimes affect your dry cereal or pharmaceutical products, and sometimes cause trouble if their pH range exceeds the safe level for the hydrochloride . . . you get the richness of the **vast Roche vitamin experience** to back up your own skills and knowledge . . . you merely have to ask for **free samples and technical assistance** from your Roche salesman or by calling or writing Roche . . . Get your vitamins **right** from Roche Vitamin Division, **Hoffmann-La Roche Inc., Nutley 10, New Jersey,** NUtley 2-5000. New York City: OXford 5-1400. Pacific Coast: L. H. Butcher Company, San Francisco, Los Angeles, Seattle, Portland, Salt Lake City. Canada: Hoffmann-La Roche Ltd., 1956 Bourdon Street, St. Laurent, P. Q.

*Roche Reg. U. S. Pat. Off.

Amic in the U.S.A.

Louis Amic of Roure-Dupont, Inc., is visiting the United States for his 28th trip in 33 years. He was recently in Russia, where he visited leading cosmetic and perfume factories and stores.

Armour's Warehouse on Wings

The Armour Pharmaceutical Company is now distributing its products by air freight service to the east, southeast and southwest, to expedite orders to customers in those areas. Other areas of the U.S. are being serviced, as formerly, by ground transportation.

The company calls its service "warehouse on wings," and according to John C. Jackson, manager of transportation and the originator of the system, orders air-mailed from major distributing centers—Boston, New York, Atlanta and Dallas—are delivered 24 hours after receipt. Orders telephoned to Chicago can be delivered even more quickly, he said.

Glycerine Awards

The Glycerine Producers' Association has announced that Dr. L. A. Goldblatt and Dr. R. S. McKenney are to share its highest award of $1000 for research contributing to knowledge of glycerine and its derivatives. Both men are research chemists with the Southern Utilization Research and Development division of the Department of Agriculture in New Orleans. The award is for their work on synthesis and tung oil monoglycerides.

A second award of $300 went to Dr. Dymtro Buchnea, Assistant Professor of Chemistry, University of Toronto, and another of $200 to Dr. Herman B. Wagner, director of clinical research for the Tile Council of America.

Chippewa to Become Division of Rexall Drug Company

Negotiations have been completed for the acquisition of Chippewa Plastics, Inc. of Chippewa Falls, Wisconsin, by the Rexall Drug Company, according to D. R. Williams, president of Chippewa, and C. W. Anderson, vice-president of Rexall.

The stockholders of the plastics company will meet soon, for approval of the transaction. Chippewa will act as an independent division under present personnel.

Louis F. Bonham, president of the Miles Products Division of Miles Laboratories, Inc., was entertained by key members of the drug trade and TV stars during his recent first trip to Los Angeles since taking office. Shown here, left to right, are William N. Pruitt, sales manager, McKesson & Robbins; Harry S. Dingman, general sales manager, Brunswig Drug; Mr. Bonham; Stan Johnson, sales manager, Los Angeles Drug; Cecil Stewart, executive secretary, California Pharmaceutical Association; and Norman Topper, assistant sales manager, McKesson & Robbins.

Radiology Journal

Winthrop Laboratories has published the first issue of a new journal dealing exclusively with radiology. A monthly, the *Radiology Reporter* is being distributed free to radiologists throughout the country. The journal is perforated, and accompanying the first issue is a binder to hold issues for future reference. Significant data presented at meetings of radiology societies will be summarized and, consequently, will reach the nation's radiologists in advance of publication of the full texts in the medical literature.

New Drug Company Founded

Tracy Hackler, president, has announced the establishment of a new drug company, Tracy Drug Products, Inc., with headquarters in Pasadena, California. The new line will offer 12 products initially, and a 36 page booklet, First Aid Guide Book, will be given free to purchasers of the firm's products.

Chemists Plan Ladies' Night

The New York Chapter of the Society of Cosmetic Chemists has scheduled a ladies' night dinner for the April first meeting, at the Grand Ballroom of the Hotel New Yorker in New York City. George Kachajian is chairman of the committee in charge of the event.

Squibb Builds New Branch

A new branch facility for shipping, warehousing, administration and a training center is being constructed at Kansas City. The new building is twice the size of the present Kansas City structure, which was erected less than five years ago.

Dow's Trycite in Full Production

The Dow Chemical Company has placed on stream the first full-scale production plant for Trycite, its polystyrene film. According to the company, Trycite is the first low-cost, thin-guage, flexible packaging film.

Fritzsche Honors R. Krone

Robert Krone, manager of Fritzsche Brothers, Inc., Flavor Sales Division, was honored at a luncheon recently, on completion of 25 years of service to the company. During the luncheon at the Charles Restaurant, New York City, he was received into the Quarter-of-a-Century Club, and was presented with a Government bond by officers and directors of the firm and a portable television set by his fellow employees.

Rutgers Plans Summer Perfumery, Oils Course

A two-week residence course in perfumery and essential oils is planned by the University Extension Division of Rutgers University, to take place on the New Brunswick campus during July 1959. Tuition and lodging would cost about $200.

Steffen Arctander of the Colgate-Palmolive Company is to be the instructor. A graduate of the School of Pharmacy of Copenhagen, Denmark, his native land, Mr. Arctander has had wide experience as a perfumer and chemist and has published in Danish, British, French, German and American journals.

Interested persons should write to the University Extension Division, 601 Broad Street, Newark 2, N. J.

Prime Minister David Ben-Gurion of Israel with Helena Rubinstein during special ceremonies held recently to dedicate the Rubinstein pavilion at the Tel Aviv Cultural Center. Miss Rubinstein donated half the cost of the $250,000 building as "a showcase for the works of artists of Israel and as an everlasting tribute to its people," she said.

Tenite Lab Expanded

The Tenite plastics development laboratory of the Tennessee Eastman Company, manufacturing division of Eastman Kodak Company at Kingsport, Tennessee, has been enlarged by approximately 5,000 square feet to accommodate additional equipment and personnel for service to the firm's plastics customers. Tenite has added a high-speed laminating and coating machine, a high-speed film overwrap machine and a new infrared spectrophotometer for quick analysis of new materials.

Ball Brothers Builds

Ball Brothers Company, Inc., of Muncie, Indiana has announced plans to build a multi-million dollar glass container manufacturing plant on the outskirts of Asheville, North Carolina, to meet the expanding market in the southeastern states. The plant is expected to be ready late this year. The Ball company produces not only home canning supplies, but also all types of glass containers, plastic medicine vials, metal closures for bottles and jars, corrugated boxes and zinc products.

New Marketing Service

John N. Kolen has established a pharmaceutical marketing service offering a complete marketing package to small and medium-sized manufacturers. The new firm, John N. Kolen Company, is at 60 East 42nd Street, New York City 17.

Mr. Kolen, who recently resigned as vice-president, marketing, of Burdick & Becker, formerly served Ciba Pharmaceutical Products, Inc. as head of promotional planning.

Rexall Buys British Company

The Rexall Drug Company has purchased Carnegies of Welwyn, Ltd., of England, fine chemical specialties manufacturer in Hertfordshire. The British firm has been established for more than 50 years, and about 40 per cent of its production is exported.

General supervision of Carnegies is to be handled by John A. Lumley, M. P. S., managing director of Riker Laboratories, Ltd.

Abbott Constructs New Building in St. Louis

Abbott Laboratories is constructing a new sales headquarters and distribution center on a two-acre site on Baur Boulevard in the Warson-Lindberg Industrial Center in St. Louis County. The single-story structure will replace the present building on Duncan Blvd., and will contain 27,000 square feet of warehouse and office areas.

Antara Appoints Amsco

Antara Chemicals, Sales Division of General Aniline & Film Corporation, New York, has appointed Amsco Solvents & Chemicals Company of Cincinnati, Ohio, as distributors for Igepal CO and CA surfectants. They will provide prompt truck delivery of drum and bulk quantities in Cincinnati, Dayton, Columbus, Springfield as well as the southern Ohio area.

Bulk storage for Igepal CO-630 and Igepal CA-630 will be established at Cincinnati in the near future. Meanwhile, bulk quantities can be supplied from Detroit in trucks of up to 6,000-gallon capacity.

Pfizer Building On East 42nd Street

The major part of a 32-story office building to be constructed at 235 East 42nd Street, New York City, has been leased by Chas. Pfizer & Company, Inc. To be known as The Pfizer Building, it will serve as world headquarters for the 110-year-old chemical and pharmaceutical firm and its subsidiaries.

The structure will contain 525,000 square feet of floor space, the major portion of which will be designed to Pfizer specifications. It will house employees of the company's international division and domestic sales and service departments now at 800 Second Avenue. In addition, accounting and financial functions now located in Brooklyn will move to the 42nd Street address in the spring of 1961 when the offices will be ready for occupancy.

FDA May Exempt Flavorings From New Additives Rules

The Flavoring Extract Manufacturers Association has submitted a list of about 300 synthetic flavorings to the Food and Drug Administration for exemption under the new food additives law. It is currently being screened by the agency for publication in the *Federal Register*, and interested parties will be given 30 days to file comments.

The proposed general regulations to implement the food additives law contain a long list of exempt additives. However, the list deals only with such items as buffering and neutralizing agents, certain colors, preservatives, sweeteners, stabilizers and emulsifying agents. The time for commenting on these has been extended until April 7 by the FDA.

Although officials are now redrafting the general regulations as a result of the many comments and suggested changes received by the agency, they have said that they do not believe regulation can be issued in final form before the law becomes effective, that is, March 5.

Paul Muhlethaler

Dr. Paul Muhlethaler, chemical executive, died in Short Hills, N. J. on February 6. Dr. Muhlethaler was president of Tombarel Products, Inc., New York manufacturers of essential oils.

.... check first with Verley

combining
fragrance
creative
talent
for your
product

The combined talents and experience of our perfumers and chemists in producing answers to your fragrance problems are at your command . . .

An odor panel discussion such as depicted here is a regular part of our routine, and the accomplishments should be of interest to you.

132 YEARS
of combined creative perfumery experience.

Send for sample
Lily
Rose 62 . . . $16.00 per pound

Albert Verley & Company

Albert Verley & Company

1375 EAST LINDEN AVENUE, LINDEN, NEW JERSEY
1018 S. WABASH AVENUE, CHICAGO 5, ILLINOIS
21 EAST 40th STREET, NEW YORK 10, NEW YORK
MEFFORD CHEMICAL CO.
5353 JILSON STREET, LOS ANGELES 22, CALIF.

- Synthetic Aromatic Products and Organic Isolates
- Bouquets and Finished Compositions
- Synthetic Flower Oils and Aromatic Bases
- Essential Oils

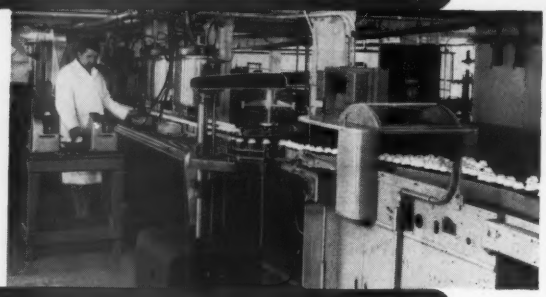
YOU RECEIVE ADDITIONAL SERVICES WHEN YOUR PRODUCTS ARE PACKED IN AEROSOL DISPENSERS BY... *Scranton Aerosol Packaging*

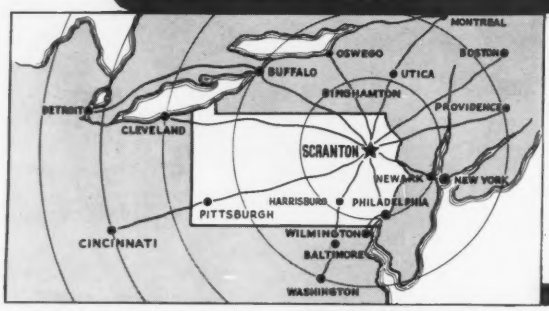
COMPLETE LABORATORY FACILITIES:

A complete modern laboratory, with graduate chemists constantly checking and rechecking formulas and propellants to insure best results for all customers and their products. One section of this modern laboratory is devoted exclusively to research and development of new products for use in many fields.

CONSISTENT QUALITY CONTROL:

Statistical quality control checks are made at frequent intervals at all critical points along the line such as: incoming packaging components and ingredients, concentrate batches, propellants, net fill weights, crimp dimensions, spray quality and patterns.
Every completed unit receives careful visual inspection before cartoning.





PERFECT DISTRIBUTION POINT:

This newest of all Aerosol custom-packing plants is located in Scranton, Pa.—the Hub of the Federal Highway program in the Northeastern section of America. Highways extend north to New England and Canada—west to the Ohio Valley—south and east to the largest cities in America. The largest markets in America are only an overnight trip away.

WRITE TODAY FOR FULL PARTICULARS:

Complete laboratory facilities, consistent quality control, over 100,000 Sq. Ft. of fireproof storage space, perfect distribution center . . . plus cold filled or pressure filled production lines with the latest, and most modern high speed, packaging facilities.

All of these can be yours at a price that will still save you money. Your product, packaged in an aerosol dispenser by SCRANTON AEROSOL, will be given the greatest of attention and care to detail, whether it be a large or small run. Write today, for full details.

More savings can be had by using our bulk concentrate storage facilities.

Scranton Aerosol Packaging

a division of THE SCRANTON CORPORATION • SCRANTON 9, PENNSYLVANIA

Management Forum

BY FRANCIS CHILSON
INDUSTRIAL CONSULTANT

Projections

Those of you who have patiently followed this department for many years will recall the innumerable times I have preached about the necessity of making future projections as a guide for operations. I have preached repeatedly about the need to measure performance against a future projection and not against past performance. The only purpose in looking to the past is to learn its lessons and to avoid the mistakes of experience. We should look *forward*. The past is dead and cannot be changed. Even as you read this everything you are doing is slipping into the past.

Because of this philosophy it pleases me greatly when a prominent business leader voices exactly the same philosophy—in this case almost in my own oft-repeated words. I quote from Ralph Cordiner, president of General Electric (*Time*, Jan. 12, 1959).

"American business spends too much time on thinking about this month, this year. It ought to spend more time preparing for 15 to 20 years from now—the next business generation."

Heed this! You're going to have to adopt the same attitude if your business survives even *this* generation.

Basic Research

"Until recently most of us engaged in basic research saw no reason to explain our work or our motives to the public. We felt there was something vulgar in discussing our peculiar problems with people not fully prepared to appreciate all the fine technical points and that it would be an immodest bid for attention. We felt that the singular world of basic research could be understood only by those who live in it. To attempt to explain it in lay language seemed hopeless and even childish—as futile and naive as to expound the current problems of the American automobile industry to an African chieftain who had never seen either America or an automobile. Now, however, as Bertrand Russell puts it, 'Not only will men of science have to grapple with the sciences that deal with man but—and this is a far more difficult matter—they will have to persuade the world to listen to what they have discovered. If they cannot succeed in this difficult enterprise, man will destroy himself by his halfway cleverness.' "

Hans Selye, S.E.P. Jan. 29, '59.

New Plant Projects

Before commiting yourself to a new building project you must answer accurately and with cold-blooded, unprejudiced, unsentimental objectivity some basic economic questions: Do you need the plant at all? Would you be better off to release the capital tied up in plant, equipment and inventories and buy all products from reliable contract firms? Should you make the plant large enough to continue to manufacture dead and doubtful items or slash the line to the core? Should the plant be made large enough to handle peak loads or should you depend upon contract houses to handle the peaks? Should you build extra space into the plant to provide for future requirements or build tight and add to the nucleus as future requirements dictate?

When you have answered all these questions objectively, honestly and with the utmost foresight of which you are capable and you have arrived at a decision to build a new plant, there are some basic suggestions which you will find helpful:

Never stint on land. Buy all you can possibly beg, borrow or squeeze the money for. A new plant development must be regarded as a real estate operation and it always multiplies land values in the adjacent area ten or twentyfold. This is especially true if the new plant is located outside an area that is already fully developed. In developed areas land is invariably too expensive to permit you to buy enough of it and, as a rule, not enough is available to provide adequate-

Looking for authoritative answers on Ethylene Oxide Sterilization of Heat- and Moisture-Sensitive materials?

American Sterilizer installation of large rectangular autoclave with automatic control for carboxide gas sterilization of heat- and moisture-sensitive materials. Routine sterilization with pressure steam is also accomplished automatically in this unit. Other equipment available ranges from the 16″x16″x30″ self contained *Cry*-O-Therm to 60″x 66″x 120″ single- or double-door models.

WHY ETHYLENE OXIDE?

As long as ten years ago, American Sterilizer researchers settled upon Ethylene Oxide (inerted with suitable diluents) as the agent of choice for the rapid and dependable sterilization of heat- or moisture-sensitive materials. Advances in such varied fields as pharmaceuticals, surgical supplies and packaging have greatly broadened the range of applications for which this versatile sterilizing agent is recommended. But they have also clearly signaled the need for a precise relationship between such factors as temperature, humidity, pressure, exposure, concentration and diluents in effecting optimum conditions for each specific application.

WHY AMERICAN STERILIZER?

Our ten year study of the characteristics of Ethylene Oxide has been paralleled by an equally thorough development of instrumentation. As a result, American Sterilizer techniques and installations are successfully serving an ever-widening range of industrial and commercial processes requiring the sterilization of heat- and moisture-sensitive materials.

Because we have accumulated the largest body of data and experience in this field, we can advise you authoritatively. Because we offer the broadest range of automatic equipment for standard or special application you enjoy significant benefits of economy and continuing efficiency.

SEND FOR THIS FREE BASIC LITERATURE

Basic literature on "Ethylene Oxide Sterilization for Industry" is available upon request. Engineers of our Scientific Division are "on call" for consultation on processes, techniques or packaging and Experimental and Pilot Plant facilities are available through our Research Division.

Write for Bulletin 1C-602

AMERICAN STERILIZER
ERIE • PENNSYLVANIA

Scientific Division

ly for future growth. Industrial land is a good investment, and, if too much has been bought to provide for even the most grandiose future projection, it can always be sold at a magnificent profit. I know of several instances where increases in adjacent land values exceeded within a very few years the cost of building the new plants.

The new plant should always be a single-story unit with adequate head room and so designed as to permit unencumbered expansion in two directions at least. Unless there is no alternative, anyone is a fool to build any other style of plant. Among a hundred other virtues, one principal virtue of a single-story plant is that it is not specialized and can be used for a multiplicity of industries radically different from your own in space requirements. Radical changes in future economic conditions may some day necessitate the sale of the plant and a single-story plant may be regarded as a quick asset because it can so readily be sold.

Personnel facilities, factory offices, control laboratories, maintenance shops and similar facilities should be attached to and on a level with the main factory, and so arranged that each functional section can be expanded without interference with the factory or with any other section.

Research laboratories can be attached to the main building provided that this section can be expanded quickly. In this way a substantial amount can be saved in construction costs. It must be remembered, however, that to attach research facilities to the main building specializes the entire building. If, in the future, the plant for one reason or another must be sold, attached laboratories would depreciate the value of the property, for the reason that no one could use specialized research facilities unless the purchaser happened to be engaged in the same business. It is therefore wiser to build the research unit on a separate part of the plot, not only because its own peculiar requirements can be met more readily, but also because the laboratories can be excluded from the rest of the plot if it ever becomes necessary to sell the main building. Another very good reason for separating research laboratories is that research requirements often dictate the use of some small, specialized out-buildings such as housing for animals.

Apart from the convenience of top management there is, indeed, no major economic reason for locating research laboratories on the plant site at all. Research never comes into contact with production until after new products have passed through the product development stage. Some firms indeed are locating research facilities in research centers or close to universities where cooperative arrangements can easily be made and supervisd.

When the new plant project has reached the "go-ahead" stage, butter the Old Man up and persuade him to take a year's trip around the world. If Mr. Big hangs around while the project is going forward, he will, as sure as God made green apples, fall for the ideas of some screw-ball architect and insist on some expensive architectural gimmick that will delay the project and add to its cost. Later on, Mr. Big, not being a technical man and unable to interpret drawings, will vehemently deny that he authorized the changes that were made. There will be a hell of a row because what Mr. Big got was not what he thought he was going to get when he approved the changes. Mr. Big can never be made to understand why it costs money and gums up the works when he insists on so simple a change as the relocation of a door after all prints and specifications have been finished. Hence, always insist that Mr. Big initial all changes that he orders made. Always remember that architects know nothing about construction costs and invariably will assure Mr. Big that the changes he wants made "won't cost very much." This is a standard architectural phrase. But when Mr. Big finds out what the change orders actually cost he will roar like the Bull of Bashan unless you've got his "John Henry" on the change orders.

Beware the Eager Beavers

In every organization there are eager beavers who are forever on the alert to demonstrate to the Big Boss how damn smart they are. They like to show how, by pulling very clever deals, they saved the company a lot of money: they bought something a lot cheaper than anyone else could get it; they got a lot more service out of their lawyers, accountants, advertising agents or consultants than the letter of existing agreements allowed them. They are very smart guys, these eager beavers, and they always make sure that the fruits of their smartness properly embellished are brought to the attention of their bosses.

What the bosses never know is that company policy is often violated by the machinations of these eager beavers. Very often through the E.B.'s the company is made to appear cheap, sharp, or actually crooked. Frequently the spirit of contracts is violated and equally often gentlemen's agreements of long standing between company officials and outsiders are vitiated. Suppliers who serviced favored customers all through the war, often at a sacrifice of higher profits they could have made elsewhere, are suddenly cut off in favor of some shyster outfit, simply because some eager beaver is trying to prove how damn smart he is.

Let me cite one of a hundred cases I have run into. The chief engineer of a big pharmaceutical house asked for bids and specifications on a large battery of truck dryers. One of my friends in that business submitted drawings, specs and a bid. Nothing happened. On inquiry my friend was told his bid was much too high and that the business had been placed elsewhere. Later still, the chief engineer of the pharmaceutical firm boasted about his new dryers and

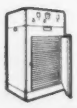
Nos.
240
250

from SLUGS
to WAFERS
is the range of this
COLTON
HEAVY DUTY
ROTARY PRESS

FEATURES

36,000 lbs. Pressure
High Speed—700 per min.
Uniform Density, Weight, Parallelism
Steel Die Table
All Types Punches and Dies

Special engineering available


Truck Ovens

Granulators

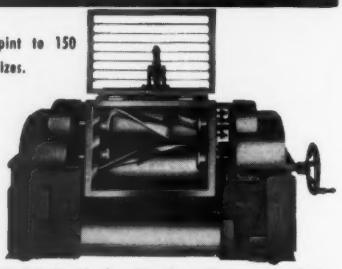
Single Punch Presses

Complete line available

ARTHUR COLTON CO.
3434 E. Lafayette
DETROIT 7, MICHIGAN

Ross
Leading mfrs. of
MIXING AND GRINDING EQUIPMENT
for over 90 years

• 1 pint to 150 gal. sizes.



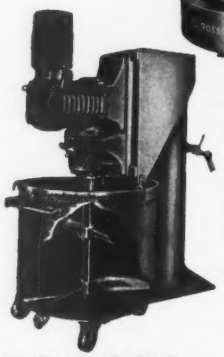
#41L—10 Gal. Double Arm Kneader with two speed brake motor. Jacketed trough and motor operated lift optional.

• 4½ x 10, 6 x 14, 9 x 24, 12 x 30, 14 x 32, 16 x 40" sizes.

#52TC—14" x 32" High Speed Three Roller Mill. Hydraulic adjustment and pressure recording gauges optional.

#30C—50 Gal. Heavy Duty Change Can Mixer. Adjustable outer scraper, cover with charging port, and gates on cans optional.

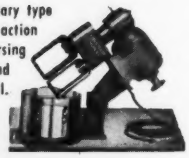
• 8, 16, 20, 50 and 60 gal. sizes.



#130H—250 Gal. Change Tank Mixer with hydraulic raising and lowering and variable speed motor. Various type stirrers and high speed impellers optional.

• 80,150 and 250 gal. sizes.

#130EL—1 Gal. Double Planetary type Change Can Mixer with shearing action stirrers, and variable speed reversing type motor. Jacketed cans and portable trucks for cans optional.



• 1, 2, 3, 4, 6, 15, 25, 50, 65, 85, 110 and 150 gal. sizes.

Write for complete information on these or other types of Ross equipment.

CHARLES ROSS & SON COMPANY, INC.
Dept. DC, 150 Classon Avenue
Brooklyn 5, New York

showed me the design drawings. I recognized them at once. They were the drawings originally submitted by my friend to the engineer. The drawings had been copied and transferred to the pharmaceutical company's blueprints, which bore their name plate, and were used to get cut-rate prices from little, local tinsmiths who could not financially back up anything they built. It so happens that I personally knew the officials of that pharmaceutical firm. I knew the immense pride with which they regarded the integrity of their products and their business dealings. If any one of them had discovered how that chief engineer had sullied the reputation of the firm he would have been fired at once.

A situation developed recently involving the use by a well-known pharmaceutical firm of implied testimonials from non-existent doctors in a brochure used in the promotion of one of their products. The brochure was picked up by the *Saturday Review* and the fraud laid bare to its readers. This unfortunate evidence of mal-practice was not only a serious blow to the pharmaceutical company involved but to the entire industry as well. Knowing the officials of this firm, I am certain they would not condone for a second any false or misleading advertising, let alone an obvious fraud. I am certain as can be that this fiasco is the work of an eager beaver who pulled some names out of a hat or invented them in order to avoid the cost and trouble of an accurate survey. The individual responsible is probably the sort of ass who always brays about beating the budget for his department, without revealing the unethical means required to do it.

Sandbar Charlie

For reasons that will be apparent from the subjoined letter and newspaper account, which I received from my good friend Charlie Bowman, president of Charles Bowman & Company, purveyors of drugs and chemicals of all sorts, I have changed his moniker from 'Christoforo Colombo Bowman' to 'Sandbar Charlie.' To tell the truth I am a little ashamed of him. Time was when Charlie could bark his boat against a rock or scrape his bottom against a reef without taking his hand from the wheel or his eye from the sextant. But to get stuck on a sandbar is something to get red-faced about. In times past I have got stuck on or at many a bar but s'help me, never a sandbar! In any case I warned Charlie to watch out for PIGS and shoals too!

"Dear Frank:

In the past, it has been my practice to ignore the remarks you have made in print with respect to my ability as a sailor and skipper. Although these scurrilous remarks afforded my friends and myself a few laughs and I had the personal consolation of knowing that even bad publicity was better than no publicity at all. . . . I must now admit that you were right all along.

"Could it be that such remarks as '. . . he knows every rock in the channel all the way down, having hit most of them at one time or another,' although a faulty statement at the time it was made was extremely prophetic?

"With a red face and in deep shame I enclose the attached clipping.

Very truly yours,
Charlie
Charles Bowman & Company"

"Bowman Officials Survive Shipwreck

"Shipwreck, and a harrowing, narrow escape, were the culmination of a yacht trip for Charles L. Bowman, president of Charles Bowman & Co., New York; Charles G. Marshall, Bowman Feed Products, Inc., Chicago; and Carl Crittendon, vice president of the Chase National Bank, New York.

"The three left Cape May Oct. 18, bound for Norfolk, Va., on the ship Romany. Around midnight a sudden and unforecast 'nor'easter' struck and at 2:20 a.m. Oct. 19 piled the ship aground on Pig Shoals, off Cobbs Island, Va. There the craft sustained a terrific beating from the 10-ft. waves on the sand shoals, listing frequently to 60 degrees. Much water was shipped, furniture broken and shifted, and all aboard were bruised and shaken.

"The Cobbs Island Coast Guard sighted the ship early in the morning, and by noon was able to tow the boat off the shoals and rescue the men. Mr. Marshall remained hospitalized in New York until Oct. 22."

Forty Billion

As the Army, Navy and Air Force continue to shoot off two-million-dollar firecrackers, otherwise known as rockets, and as the Government's annual budget continues to increase for war material, which is largely obsolete by the time it is designed and delivered, I think that you and I and all other tax saps should think about a few of the useful capital investments that could be made *every year* with a forty-billion-dollar expenditure.

We could build every year 20,000 two-million-dollar high schools. We could build every year 8,000 five-million-dollar hospitals. We could build every year 20,000 miles of four-lane superhighways. We could build every year 4,000 ten-million-dollar sewage treating plants. We could endow 400 universities with one hundred million dollars each. We could build and give away two million $20,000 homes.

We could—but we wouldn't. History has shown that it is impossible to persuade politicians to vote large sums of money for anything but essentially useless purposes. What a country this would be in ten years if the money wasted in war or preparations for war could be invested in permanent capital goods!

glamour in stainless steel

AT HELENA RUBINSTEIN

Saving many man hours of labor with GROEN "cooker-mixer" kettles, and employing the very latest equipment and techniques in methods of handling liquid items are demonstrated in these pictures at Helena Rubinstein's cosmetic factory, designed to operate on the "gravity-flow feed" system.

GROEN steam-jacketed, agitator kettles process quality cosmetic products

Twenty GROEN stainless steel, steam-jacketed "cooking-mixing-cooling" kettles (30 to 1000 gallon capacities) with single or double motion agitators provide *maximum reliability, efficiency and purity* in the preparation of shampoos, lotions, creams, mascara and other formulations at Helena Rubinstein's world-famous cosmetic laboratories at East Hills, New York.

For example: The heavy-duty, life-time construction plus sanitary, modern design Model TA twin-shaft "cooker-mixer" kettle, shown above, assures controlled heating and cooling temperatures to exacting laboratory standards in processing of fine cosmetic products. Thorough blending-mixing is accomplished by the main agitator which rotates slowly and swirls the cream mixture into the high-speed secondary mixer. Various types of mixers—paddle, beater, bar or turbine types—can be utilized. All agitator parts are readily removed for fast, easy cleaning.

GROEN also builds a complete line of stainless steel Mixing, Cooking and Storage Tanks, Revolving/Coating Pans, and Vacuum/Pressure Vessels for drug and cosmetic applications. For more technical information, write to GROEN MFG. CO., Dept. DCI-259.

FREE LITERATURE

Bulletin TAK-2 gives complete description and specifications on GROEN line of stainless steel, stationary and trunnion "cooker-mixer" kettles. Revolving/Coating Pans described in Bulletin VP-1. Literature sent on request.

World's Largest Producers of Stainless Steel, Steam-Jacketed Kettles —Since 1907

GROEN MFG. CO.

4535 W. ARMITAGE, CHICAGO 39 • 30 CHURCH ST., NEW YORK 7

Low Cost Table Model Packaging Machine

Now available from Chemical and Pharmaceutical Industry Company, Inc., 90 West Broadway, New York City 7, is the multiple purpose strip packaging machine priced below $2000.00. It can wrap compressed and coated tablets, soft gelatin capsules and two-piece hard gelatin capsules, suppositories, and the like, and changing from one type of product to another takes only minutes. It can be run semiautomatically or fully so, and can produce up to 10,000 units per hour, averaging 6,000. It can handle any type of heat-sealing material, and the temperature is adjustable.

New Compound Vacuum Pumps

The F. J. Stokes Corporation, 5500 Tabor Road, Philadelphia 20, Penna., is offering new two- and three-cfm. compound vacuum pumps that operate quietly, are vapor-free, compact, light and sturdy for both laboratory and production use. The ultimate blankoff pressure is 0.1 micron, and Model SC-2 has 2.3 cfm. displacement, SC-3 has 3.7 cfm. displacement. The two cylinders of the compound unit are in series for high volumetric pumping efficiency, and lubrication is automatic. Motor and pump are mounted on a common base plate making a portable unit weighing only 60 pounds.

Liftomatic Drum Handling Attachment

A Liftomatic drum handling attachment that can be used interchangeably with its line of electric fork trucks has been developed by Lewis-Shepard Products, Inc., 125 Walnut Street, Watertown 72, Mass. A mechanical unit designed to engage, transport, place and tier any conventional drum without use of pallets or dunnage, it has a clamping mechanism adjustable from 35 to 14 inches, enabling it to handle any size drum, regardless of height, diameter, head or rim size, and the jaws operate equally well on steel, removable lid, fiber or light gauge (disposable) metal drums either open or closed. No additional controls are needed. The unit is quickly detachable, requiring no tools.

Price Marking Machine

The A. Kimball Company, Rewe Street, Brooklyn 11, New York, has added a new label price marking machine to the firm's line of product identification equipment. The Stamp-It is quick, economical and easy to operate. It feeds labels automatically under a rugged self-inking printing head which then imprints in clear, large, legible type. In combination with Kimball's pressure-sensitive Zip-Strip — fast peeling lables that require no moistening—it makes price marking very easy.

Drying Oven for Paper Chromatography

A drying oven for use in paper chromatography has been developed by the New Brunswick Scientific Company, Somerset Street, P. O. Box 606, New Brunswick, N. J. The model, CD, combines the advantages of full-view color development, compactness of size and moderate cost. Special features include a metal-reinforced safety glass door which affords continual and complete view of the drying action or color development. The oven heats to a preset temperature up to 110°C. within about 20 minutes and three sheets 18¼″ x 22½″ can be accommodated simultaneously. Model CD is 33½″ high, 27″ wide and 14″ deep at base, with a 7″ inside depth of heating chamber. Completely insulated, exhaust is by attachment to a water aspirator.

High-Efficiency Mechanical Filters

The American Air Filter Company, Inc., 215 Central Avenue, Louisville 8, Kentucky, offers three mechanical filters.

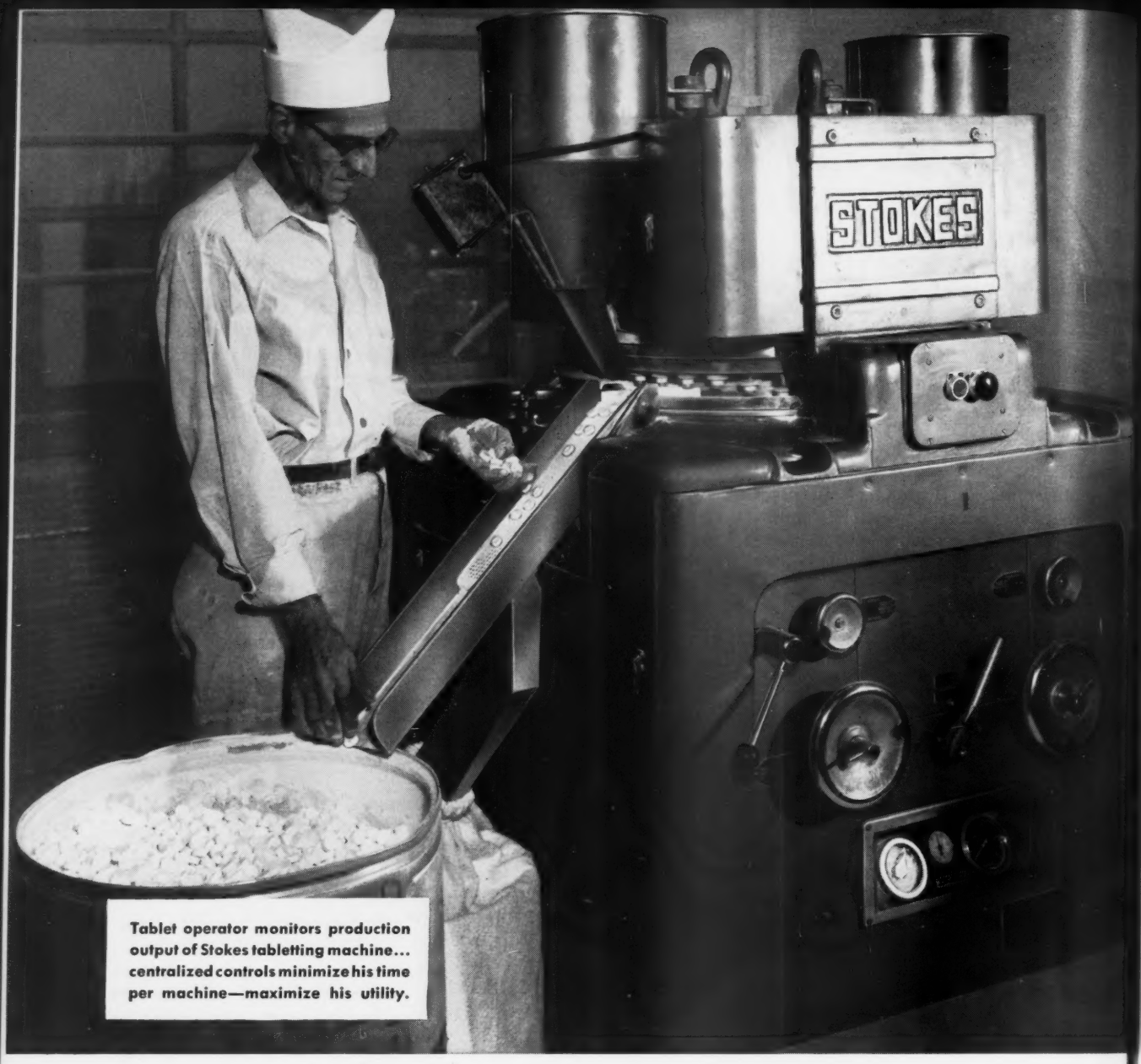
Type F consists of closely spaced pleats of filter medium with corrugated separators, which permit passage of air or gas to full depth of pleats, utilizing the entire area of the medium. This can be asbestos cellulose, glass or ceramic fibers. Efficiency is guaranteed up to 99.97 per cent on 0.3 micron particles. The Multi-Pak is a dry filter designed to use a wide range of filtering media including Airmat, Filterdown and felt. Collection efficiency, depending on the medium, ranges from 45 to 90 per cent. The Airmat Deep Bed filter is a pocket type for handling dry media of more than usual thickness in applications requiring air cleanliness in the range of electronic precipitators in which the electrostatic principle is impractical.

New Laboratory Distillation System

Release of a new patented distillation unit capable of producing sterile, pyrogen-free water from ordinary boiler steam has been announced by the Wilmot Castle Company, 1927 East Henrietta Road, Rochester 4, New York. The Steril-Aqua system can purify water, contaminated to 6,500 ppm., to 0.5 ppm. in a single pass. Operation is continuous and completely automatic, requiring no flushing or deconcentration. Standard units are available in 5, 25, 50, 100, 250 and 500 gph capacity, and larger units can be custom built. All parts in contact with pure vapor or distillate are Type 316 stainless steel, while filter tank assembly and piping between steam separator and tank are Type 302 stainless steel. Gasket materials in contact with pure vapor or distillate are Teflon. Signals notify operator if water purity falls below the pre-selected standard, and such water is automatically by-passed by a solenoid valve and returned to waste.

New Low-Priced End Carton Gluer

Alford Packaging Machines, Inc., Ridgefield Park, N. J., offers the Minisealer, a low-priced end carton gluer which occupies only four square feet of space, weighs under 100 pounds and produces 1,000 units or more per hour with one operator.

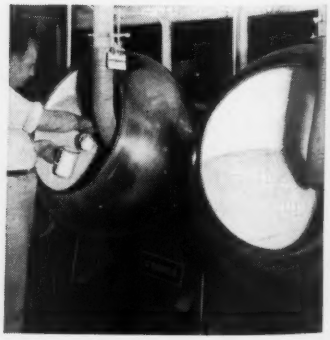


Tablet operator monitors production output of Stokes tabletting machine... centralized controls minimize his time per machine—maximize his utility.

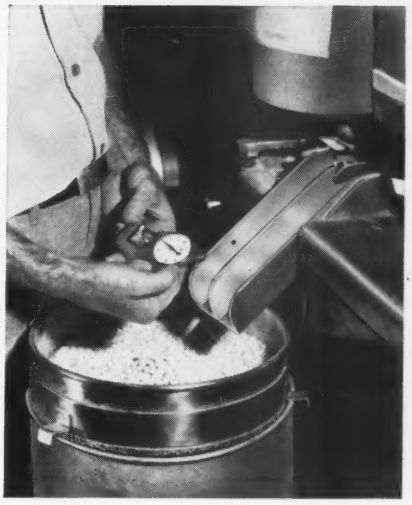
Other Stokes equipment at work for Wyeth...

Two Stokes Model 566 Multi-layer Tabletting Machines press 2 and 3 layer tablets to perfection. Pre-compressed layers permit periodic weight checks . . . create clean, sharp layers.

Many of Wyeth's earlier machines were Stokes BB-2 rotary tabletting machines. Wyeth's excellent preventative maintenance program keeps these and other equipment in top operating condition at all times.



In the finishing section, a battery of Stokes Coating and Polishing machines are in continuous service. Here, cores are coated with a palatable neutralizing agent — colored for tablet potency identification.



In all drugs, accuracy of the dosage is critical. At Wyeth, tablets are carefully checked for size. The precision of Stokes tabletting equipment aids in adherence to close tolerances.

Wyeth produces many products in Stokes-equipped tabletting department

Wyeth Laboratories, a division of American Home Products Corporation, operates a large tabletting department at their Washington Avenue plant in Philadelphia. Nearly every machine connected with the production of tablets of all types bears the name Stokes.

One of the largest single production items in this plant is a tablet produced in 4 physical sizes, at 5 strengths, using a bank of Stokes Model 533's. These tablets are then sealed, color coated, and polished on a large bank of Stokes Pan Coaters and Polishers located in an adjoining area.

The primary requirement in this operation is exact control of tablet size and weight. The precise engineering in both design and construction of the Stokes 533 assures dependable control of both. N. R. Brenner, Plant Superintendent, and F. D. Koup, Tabletting Department Manager both agree that the Stokes Model 533 high speed press is excellent for tabletting operations—"giving us the quality we want—in the quantity we want."

The Stokes Model 533 occupies little floor space. Operating costs are lower because the press requires so very little attention. Pressurized lubrication is continuous and completely automatic. Centralized controls and easy access enable fast and accurate set-up, adjustment and changeover.

Find out how the new Stokes Rotary Tabletting Machines can save on your own production runs. Write for Bulletin 650—or call your nearest Stokes office.

Pharmaceutical Equipment Division
F. J. STOKES CORPORATION
5500 Tabor Road, Philadelphia 20, Pa.

STOKES

Trade Literature

Research Chemicals

Ansul Chemical Company's Market Research and Development Department, Marinette, Wisconsin, has made available a folder, Chemicals for Research. It lists 12 methylated compounds and thirteen nitrogen heterocyclics now offered in development quantities up to 55 gallons.

Codeine Usage

A comprehensive booklet on the use of codeine, available as a six-page insert in the February 28 edition of the *Journal of the American Medical Association*, is being distributed on request in reprinted form by Merck & Company, Inc., Chemical Division, Rahway, N. J., to physicians, medical libraries, medical schools and schools of pharmacy. The booklet is an up-to-date, comprehensive, authoritative review of the drug recently compiled by Merck, and includes references more than 90 per cent of which were published within the past year.

Catalin Laboratories

A new 12-page, illustrated booklet describing the plants, facilities and major products of Catalin Corporation of America is available from the firm's offices, one Park Avenue, New York City. Titled Catalin—Chemicals, Resins, Plastics, it provides important information on many of the firm's products and their applications, including antioxidants and bacteriostats, thermosetting and thermoplastic industrial resins, and various formulations of styrene, nylon and polyethylene plastics.

Convention Planning

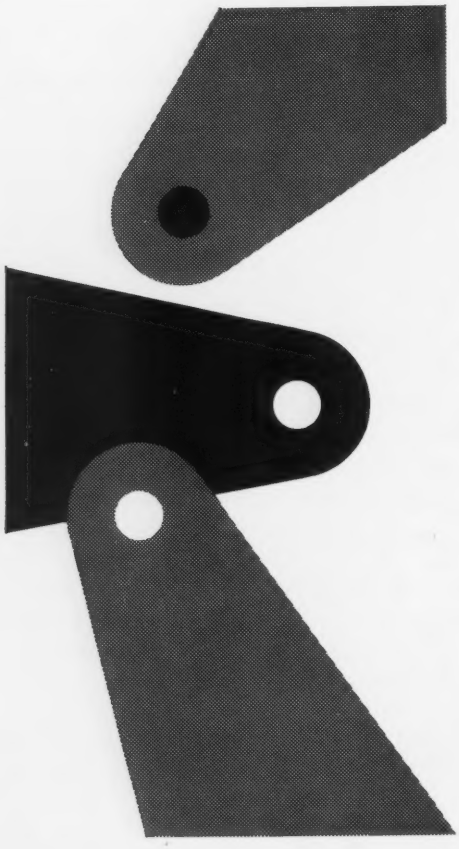
A guide to convention and trade show planning and participation is available free of charge from Manpower, Inc., 810 N. Plankinton Ave., Milwaukee 3, Wisconsin. A special research report, it is entitled 100 Suggestions for Convention & Trade Show Exhibitors, and is designed to facilitate sales.

Corn Syrups and Sugars

A revised edition of the 45-page illustrated booklet, Corn Syrups and Sugars, has been published by Corn Industries Research Foundation, Inc., and is free on request from the Foundation, 3 East 45th Street, New York City 17. It covers corn syrups, corn syrup solids, crude corn sugar and dextrose, all with respect to manufacturing processes, chemical and physical processes and recommended equipment and procedures for handling, and is amplified with tables and a glossary.

The Fragrant Life

Dodge & Olcott, 180 Varick Street, New York City 14, has made available in a 40-page illustrated booklet its series, The Fragrant Life, which was run during 1957 and 1958 in the firm's house organ, D&O News. The series is a brief but comprehensive survey of some newer aspects of the vast odorants field describing the application of fragrance to such diverse industries as medicinals, fertilizers and pet products. The series has been edited to bring it up to date.



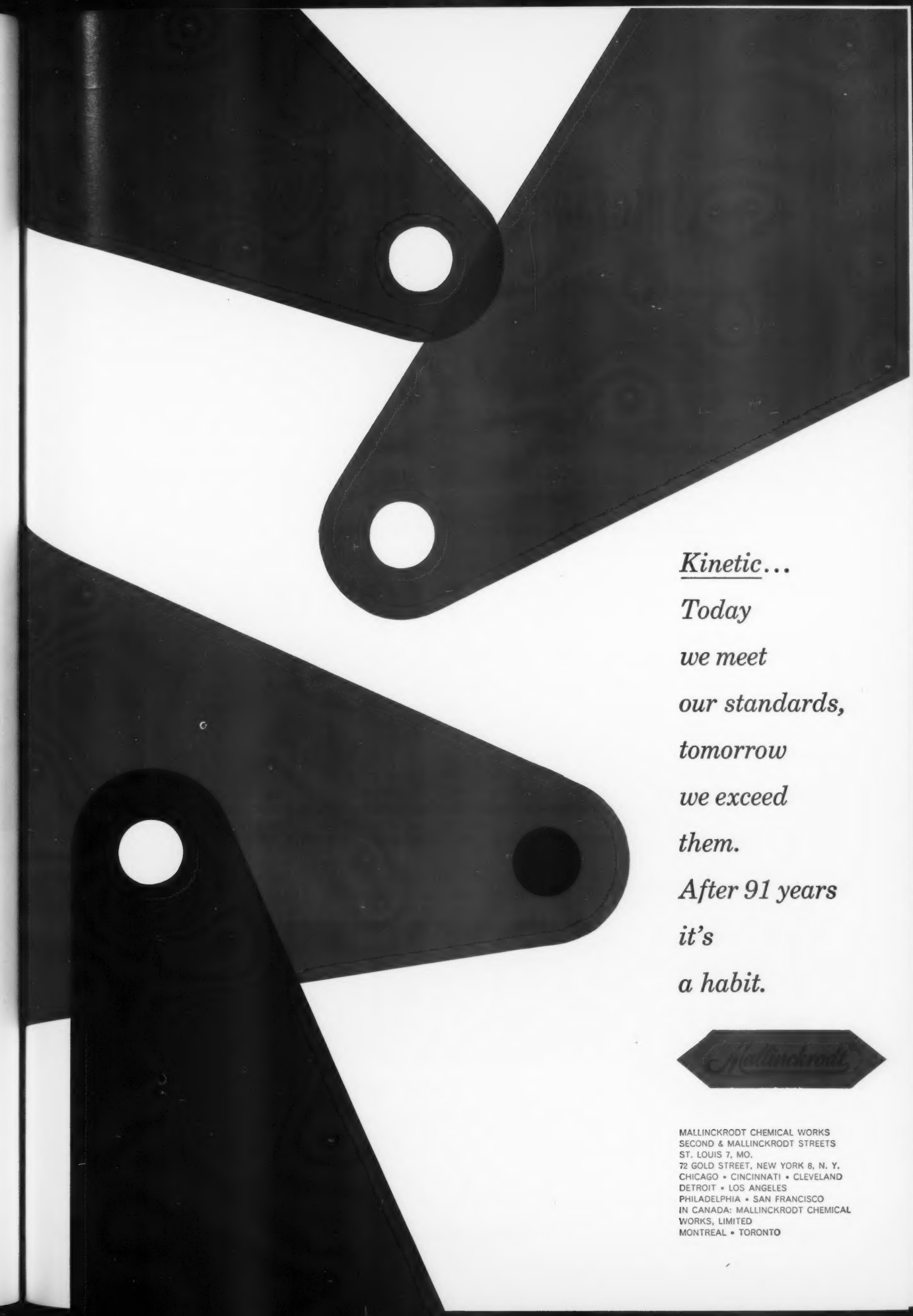
An example of kinetic research

TOLERON® brand of ferrous fumarate

excels other iron compounds because...

- it yields more elemental iron
- it is absorbed quickly and efficiently
- it is better tolerated
- it has no typical "iron" taste, even in the uncoated tablet
- it has a higher margin of safety
- it produces excellent hemoglobin response
- it combines easily and perfectly with the usual fillers, lubricants and disintegrators to make perfect tablets or capsules

Mallinckrodt®



Kinetic...

Today
we meet
our standards,
tomorrow
we exceed
them.
After 91 years
it's
a habit.

Mallinckrodt

MALLINCKRODT CHEMICAL WORKS
SECOND & MALLINCKRODT STREETS
ST. LOUIS 7, MO.
72 GOLD STREET, NEW YORK 8, N. Y.
CHICAGO • CINCINNATI • CLEVELAND
DETROIT • LOS ANGELES
PHILADELPHIA • SAN FRANCISCO
IN CANADA: MALLINCKRODT CHEMICAL
WORKS, LIMITED
MONTREAL • TORONTO

American Distilled Oils

Produced at our Patchogue, Long Island, N.Y. Factory

OILS

BALSAM PERU	CITRONELLOL	OLIBANUM	PATCHOULY
CASCARILLA	CLOVE	OPOPONAX	PIMENTO
CELERY	GERANIOL	ORRIS LIQUID, Conc.	SANDALWOOD
	NUTMEG		STYRAX

also CITRAL • EUGENOL • LINALOOL • RHODINOL

RESIN LIQUIDS

BALSAM PERU	CELERY	ORRIS
BALSAM TOLU	LABDANUM	STYRAX
BENZOIN	OLIBANUM	TONKA
	OPOPONAX	

74 *Years of continuous quality service — suppliers and manufacturers of*

Essential Oils • Aromatic Materials • Perfume Materials • Flavors • Colors

GEORGE LUEDERS & CO. NEW YORK GL REGISTERED TRADE MARK

GEORGE LUEDERS & CO.

427 WASHINGTON ST., NEW YORK 13, N. Y.

Chicago • San Francisco • Montreal • Philadelphia • Toronto

Established 1885

Compounder's Corner

Juvenile Hormone

The juvenile hormone, which prevents the metamorphosis and prolongs the life span of insect larvae, has been found in human placenta, from which a highly active extract was made by C. M. Williams of Harvard. The hormone, activity assayed by the effect on the development of the pupa of the American Polyphemus moth, has been found in the tissues of day-old rats, in dairy cream, bone marrow, sheep pituitaries and various internal organs of sheep and cattle. It appears to be most highly concentrated in the thymus gland which is large and active in youth but is less important in maturity.

"In view of the extraordinary biological activity of this hormone on the growth, metamorphosis and aging of insects" writes Dr. Williams in "Nature," "it seems important to decide whether the juvenile hormone may play a role in mammalian physiology or whether its presence in higher forms is something of a biochemical curiosity."

Comment: Shall we wait before we start incorporating this most attractively named juvenile hormone or "Peter Pan Hormone" into our cosmetic products? As an advocate of active ingredients in beauty preparations, as an exponent of products that will do what they claim to do, I take no position that proposed additives, no matter how outlandish, are in themselves either bad or useless. I say only that we must not depend upon unsubstantiated assertions in the European literature; we must examine what purports to be scientific proof of efficacy and throw out what may be only amateur investigation colored by subjective factors. Outright fraud is not always easy to detect. I find the implications of this juvenile hormone to be enormously exciting; investigations on mammals and human beings will have to be of the same high quality as the pioneering work of Dr. Vincent B. Wigglesworth of Cambridge University and Dr. Carroll M. Williams of Harvard. J.K.

Lehman on Cosmetics and Drugs

Dr. A. J. Lehman, Director of the Division of Pharmacology of the Food and Drug Administration, drew record attendance for his talk at the February meeting of the New York Chapter of the Society of Cosmetic Chemists.

Because claims for new products containing newer synthetic materials have taken them beyond the realm of cosmetics into the category of drugs, Dr. Lehman opened his talk with a clear-cut description of a "cosmetic" and a "drug" as defined by the Food, Drug, and Cosmetic Act. He pointed out that an article may be both a cosmetic and a drug and, if this be the case, it is subject to the labeling requirements of the drug section which are more extensive than those of the cosmetic section.

In discussing the label of a drug, Dr. Lehman indicated that it must state the common names of active ingredients and provide adequate directions for use and adequate warnings where necessary. Labeling statements which are false, misleading, or lack supporting scientific evidence, are considered by the Food and Drug Administration to be misbranded.

To illustrate the F&DA's concern that products be safe, effective and honestly represented, Dr. Lehman dealt at some length with some ingredients of products that are merchandised and used as a cosmetic, but, since they purport to affect a physiological function, are drugs.

Some of the ingredients covered were: hormones; Vitamins A and D; antibiotics; mercury compounds; antiseptics; royal jelly; oral cosmetics potentiating suntanning and sun tolerance; and, severely toxic drugs, such as poisonous heavy metals, etc.

In discussing these compounds he indicated that the use of these compounds fell into one or more of the following categories:

(a) Unsubstantiated claims making it a misbranded drug.

(b) Potent substances capable of causing injury if not properly compounded or adequately labeled.

(c) Insufficient knowledge of its potential systemic toxic effects.

(d) Skin irritants unless used at low concentrations.

Even if the product used is inoccuous, if its intended purpose is to affect the structure or fuction of the body, it is to the interest of the industry that it be classed as a drug, making sure it is safe, effective and honestly represented.

Tissue Extracts in Serum and Cream Form

Winkled skin, underdeveloped breasts, and certain pathological conditions of the skin are greatly benefited by treatment with placenta extract either in pure form or incorporated in a cream, according to Nadja Avalle, *Parfumerie, Cosmetique, Savons*, 1958, pp. 347-350. The lyophilized extracts exhibit great stability and activity.

Tissue extracts, and placenta extract in particular, are marketed in two different forms: the pure extract comes in two and three cc. ampoules equivalent to two or three grams of fresh tissue, respectively. Prepared by lyophilization, this extract keeps indefinitely. The extract may be incorporated in a cream or lotion formulated for immediate percutaneous

absorption of the active principles. Such products are based on oil or fats of animal origin and must exclude all mineral oil bases.

The skin must be well prepared to receive the extract, first by cleansing with a lotion, then by light peeling, and, if possible, by the softening action of steam. The skin is then wiped with a little sponge and the contents of an ampoule or a layer of cream are applied.

For rapid and full penetration massage is of the greatest importance. In addition to massage which is within everybody's reach, electrophoresis and iontophoresis can be used to encourage penetration.

For wrinkle treatment the product is applied at least ten times in the manner described above. All layers of the epidermis will be invigorated, local metabolism will be stimulated, circulation in sub-cutaneous tissues will be activated, and loose tissues will be tightened. The final result will be disappearance of small wrinkles and an improvement in the deeper fuurows. This treatment may be applied also on a young skin as a preventive against wrinkle formation.

Psoriasis, juvenile acne, seborrheic eczema, and other pathological conditions of the skin are said to respond to treatment with tissue extracts. For therapeutic purposes daily applications are required, if possible in combination with ultraviolet light.

Treatment with extracts of animal tissues are entirely harmless, according to Dr. Avalle.

Improved Cold Wave Solution

Conventional hair waving preparations based on thioglycolic acid have an unpleasant odor which may grow unbearable with increasing oxidation. Thioglycolic acid can be advantageously replaced by 2,4-thiazoledione (mustard oil acetic acid), according to Swiss patent 322,479, issued to Kefakos AG., Zuerich. 2,4-Thiazoledione, a heterocyclic sulfur-containing compound, is reacted with an aqueous solution of ammonia and the resulting solution is mixed with a water soluble acetate.

In an example, 12 grams thiazoledione are treated with 100 ml. of aqueous ammonia at 80°C. until the iodine number reaches its maximum. The resulting solution is treated with eight to 14 grams of ammonium acetate and is finally adjusted with ammonia to the desired pH.

Lantrol Ointments

Lantrol is capable of absorbing large quantities of water and of increasing absorption of water in hydrophilic ointment bases, according to a study by M. M. Malmberg and M. C. Vincent (*J. Am. Pharm. Assoc. Pract. Pharm. Ed.* 20: 83, 1959). Those ointments containing 2 per cent stearyl alcohol and 8 per cent Lantrol in white petrolatum and 2 per cent cholesterol and 6 per cent Lantrol in white petrolatum provided maximum water absorption.

The release of butacaine sulfate, cyclomethycaine sulfate, dibucaine hydrochloride, piperocaine hydrochloride, and tetracaine hydrochloride from a number of ointment bases has been tested. Those ointment bases containing Lantrol which are able to absorb water in high concentrations liberated the anesthetic in 9 to 10 minutes after the ointment was applied to the skin. It would therefore seem advantageous to incorporate Lantrol into ointment bases where a more rapid effect of the medication is desired.

Water-in-Oil Emulsifier

Swift & Company, Soap Department, Union Stock Yards, Chicago 9, Illinois, is offering Solar Emulsifier F221 as an emulsifier for water-in-oil emulsions. Although information about its composition is being withheld and toxicological tests have not yet been made on the emulsifier, its properties are sufficiently interesting to warrant investigation for cosmetic and pharmaceutical formulation.

These emulsions are easily prepared and are very stable. The internal, or water phase, may be neutral, acidic, alkaline, or saline. Heat stability is excellent.

The recommended procedure for the preparation of emulsions using Solar Emulsifier F221 is to dissolve the emulsifier (approximately 1.5 per cent of the total emulsion weight) in the oil phase and add the water while mixing. No heating is necessary.

When the oil phase is a heavy mineral oil the addition of an amount of methylene chloride or chloroform equal to the amount of emulsifier used will facilitate the emulsification.

If the use of solvent is not permissible, water may be effectively emulsified in heavy mineral oil, by incorporating an inorganic salt in the water phase, and/or increasing the amount of emulsifier. Inorganic salts which can be used include calcium chloride, sodium chloride, sodium sulfate, sodium nitrate, calcium sulfate, sodium tripolyphosphate and trisodium phosphate. The amount of salt required depends upon the amount of emulsifier used and will vary from 1.5 to 5 per cent, and in the same way, the amount of emulsifier required depends upon the salt concentration in the water phase. Generally 1.5 per cent Solar Emulsifier F221 requires 5 per cent salt in the water phase when working with heavy oils. Five per cent F221 is required when the salt concentration is between 1 and 2 per cent.

When working with heavy mineral oil the amount of water which can be emulsified may be reduced. Upper limits for the internal water phase in each oil must be determined experimentally.

Solar Emulsifier F221 is a 100 per cent active, practically odorless, dark amber colored, liquid. It has an average pour point of 10°F. This emulsifier is slightly soluble in water and soluble in diesel oil, kerosene, paraffin oil, isopropyl and ethyl alcohol, methylene chloride, and chloroform.

Deodorant for Cosmetics

Bis-(para-chlor-meta-cresyl) methane is suggested as a germicidal additive for the formulation of deodorant powders, creams, soaps, and other personal products. Eastern German patent 11,761, VEB Farbenfabrik Wolfen, Wolfen, (Kr. Bitterfeld.

Eez Acnecare (Pfizer Family Products) is a flesh-colored, greaseless, medicated aerosol foam containing) 0.05 per cent of tyrothricin, 0.25 per cent of hexachlorophene, 8 per cent of sulfur, 2 per cent of resorcinol, 10 per cent of zinc oxide, 9.3 per cent alcohol and Freon propellant. This preparation for the treatment and masking of pimples and other skin blemishes associated with acne is available in pink plastic-coated 2 oz. aerosol glass bottles.

no one under the sun beats Croda for production of lanolin!

Croda's world-wide organization now offers
better than ever service through
our newly opened plant in the United States
. . . the better to serve our customers
who now buy over 10,000,000 pounds of lanolin
and lanolin derivatives from us per year . . .

Are you receiving the Croda Data Sheet regularly? If not, write today for this valuable information.

CRODA, Inc. 15 East 26th Street New York 10, N. Y. MU 3-3089

Croda
★ New York
★ London, England
★ Verviers, Belgium
★ Milan, Italy

Designed & Executed by Alexander Strull Advertising, Inc., Hempstead, N.Y.

Perfumer's Shelf

Decolorized Concretes

For certain specialty applications such as cosmetics the color of floral concretes is not desirable, according to J. Artozoul, *Parfumerie, Cosmetique, Savons*, 1958, pp. 329-338. Natural coloring agents originating in the flower itself are partly to blame for the color. Decomposition products formed in processing and particularly in solvent evaporation are other causes of the discoloration. Various methods have been developed for preparation of colorless concretes. All of these attempt to keep vaporization temperatures below decomposition levels and to increase the yield of a perfume product having desirable olfactory and color properties.

Methods available include direct distillation under vacuum (1 mm Hg); distillation in the presence of an inert carrier; steam distillation; distillation with glycol or glycerine, and high vacuum distillation (0.01 mm). To prepare a decolorized concentrate with odor properties as close as possible to those of the original flower concrete one must combine distillation and decolorization by adsorption on a solid adsorbent. The volatiles are separated by distillation. The residues, which play an important olfactory role, are then decolorized, and finally the yields from both operations are combined.

Concretes of high volatiles content can be successfully processed by direct distillation under vacuum without undue risk of decomposition. Materials of low volatiles content require exposure to temperatures higher than their boiling points and the final fractions are usually contaminated with decomposition products of potent and disagreeable odor.

To minimize the decomposition problems, attempts have been made to lower the vaporization temperature of the fragrant constituents and to stabilize that of the material being boiled by introducing a third material, which may be a liquid or dry steam. Such additives are generally highly oxygenated, products of neutral olfactory and chemical properties, capable of forming azeotropic mixtures with such volatile materials as glycols, polyethylene glycols, or polyols. Since they are water soluble these additives can easily be separated from the fragrance materials. The latter are thus finally isolated in a pure form.

Other water insoluble additives may be employed as temperature stabilizers of the product being distilled and as carrier of the volatile fractions. These may be aromatic esters such as benzoates or phthalates or esters of high molecular diacids such as adipates or sebacates. These acids, common in the plastics industry, must be upgraded prior to their use in fragrance distillation processes. Diluents of this type form a homogeneous distillate from which the fragrant principles cannot be separated. The range of application of such products is limited. They are of interest in soap perfuming and a number of specialized fields.

Another direct distillation process under high vacuum has been developed in recent years. Provided certain precautions are observed this method offers considerable advantages in the processing of floral concretes, according to Dr. Artozoul. Its successful operation requires special apparatus. A molecular high vacuum still is described which features "downward flow of the liquid film." The operation is performed in three or more cycles. It can be started with floral concrete which has not been pretreated and which may contain a high proportion of solvent. Number of cycles, distillation temperatures and pressures can be adjusted. The material is never overheated and all volatiles having molecular weights below 280-300 are separated out without undergoing undesirable changes.

The molecular still featuring "descending liquid film" is not the only apparatus capable of successfully decolorizing floral concretes. Some processes incorporate centrifugal separators. Some are arranged in several tiers which permit fractional distillation at pressures ranging from 0.1 to one micron. Molecular distillation in a correctly installed unit never requires temperatures exceeding 50 to 60°C.

Mimosa

In the emulation of the basic mimosa fragrance according to E. S. Maurer, writing in "Soap, Perfumery and Cosmetics," a useful hint may be borrowed from the build-up of the Gardenia nuance, in which the characteristic odor is due to the natural presence of phenylmethyl carbinyl acetate. Although so far not located in Nature, we find in *p*-methyl acetophenone a parallel dominant in the Mimosa osmophore.

Known also as Melilotal, with which may be bracketed di-hydro coumarin (Melilotin) and also dimethyl acetophenone, as these are valuable contributors to simulations of clover and melilot. We should particularly note that it is upon the presence of acetophenone that the sweetness of labdanum is due, and that this ketone forms the major portion of the fragrant oil distilled from a small yellow-flowered Australian shrub, namely, *Stirlingia latifolia*.

The neroli-hawthorn motif appears to be an intrinsic part of a large number of the fragrant legumes, but from this point onwards

NEW!
YLANG YLANG PURE No.
NEW!
YLANG YLANG PURE No. 123
FRI
76 N
Branch Offi
*Los Angele
*Mexico, D.

NEW!
YLANG YLANG PURE NO. 123

NEW!
YLANG YLANG PURE NO. 123

NEW!
YLANG YLANG PURE NO. 123

NEW!
YLANG YLANG PURE NO. 123

NEW!
YLANG YLANG PURE NO. 123

NG PURE NO. 123

OUR

For a correct answer to
ine the continuing scene
...There you will find
established leadership,
the most modern facil
scientific techniques, ap
its experience and the
skilled personnel to the
ing *the right product a*

FB INC.

FRITZSCHE BROTHE

76 NINTH AVENUE NEW YO

Branch Offices and *Stocks: Atlanta, Ga., Boston, Mass., *Chicago, Ill., Cincinn
*Los Angeles, Cal., Philadelphia, Pa., San Francisco, Cal., St. Louis, Mo., Mont
*Mexico, D. F. and *Buenos Aires, Argentina. Factories: Clifton, N. J. and

WHAT IS
R WORTH
TO YOU?

er to *that* question exam-
scene *behind* our products
find an organization of
rship, fully supported by
facilities and advanced
es, applying its energies,
d the competence of its
to the problem of provid-
duct and quality for you!

IERS, Inc.

YORK 11, N. Y.

Cincinnati, Ohio, Greensboro, N. C.,
o., Montreal and *Toronto, Canada;
. J. and Buenos Aires, Argentina.

A QUE

AN AN

AND P

FB INC.

UESTION...

ANSWER...

PROOF!

COMPA
COMPA
COMP

Yla

YOUR attention
priced specialty for
onstrates how the fo
the accumulated skill
laboratory and manu
upon a predetermine
astonishing economie
Ylang is an importa
of soaps, toiletries
Ylang Ylang Extra
$38.00 per lb.; Firs
Second Quality at $1
PURE NO. 123—a
search . . . a correct
ture of absolutely pu
offered at the remark
Odorwise, qualitywise
standing advantages
pure, natural ylang in
Convincing proof of t
onstrated by compari
NO. 123 with its muc
First and Second Qu
and see what a well
effort by Fritzsche spe
its customers.

FRITZ

76 NINTH

Branch Offices and *Stocks
*Los Angeles, Cal., Philade
*Mexico, D. F. and *Buen

COMPARE! COMPARE! COMPARE!

Ylang Ylang

PURE No. 123

YOUR attention is called to this attractively priced specialty for a particular reason: It demonstrates how the focusing of such resources as the accumulated skills, experience and specialized laboratory and manufacturing facilities of our firm upon a predetermined objective often results in astonishing economies for our customers. Ylang Ylang is an important oil used in the perfuming of soaps, toiletries and cosmetics. Top quality Ylang Ylang Extra has been quoted recently at $38.00 per lb.; First Quality Ylang at $24.00; Second Quality at $12.15. Our YLANG YLANG PURE NO. 123—a product of long-studied research . . . a correct, scientifically balanced mixture of absolutely pure ylang ylang fractions—is offered at the remarkably low price of $8.75 lb. *Odorwise, qualitywise and pricewise,* it offers outstanding advantages to all those who require a pure, natural ylang in their fragrance formulations. Convincing proof of these advantages can be demonstrated by comparing YLANG YLANG PURE NO. 123 with its much costlier "Extra" grade and First and Second Quality oils. Examine this oil and see what a well conceived concentration of effort by Fritzsche specialists has accomplished for its customers.

Also Available: ACETYLATED YLANG YLANG PURE No. 123

This acetylated version of our product has a higher ester value — a complete, fully rounded and, therefore, smoother odor. Write for samples if you're interested.

FRITZSCHE BROTHERS, Inc.

76 NINTH AVENUE NEW YORK 11, N. Y.

Branch Offices and *Stocks: Atlanta, Ga., Boston, Mass., *Chicago, Ill., Cincinnati, Ohio, Greensboro, N. C., *Los Angeles, Cal., Philadelphia, Pa., San Francisco, Cal., St. Louis, Mo., Montreal and *Toronto, Canada; *Mexico, D. F. and *Buenos Aires, Argentina. **Factories:** Clifton, N. J. and Buenos Aires, Argentina.

may be located many instances of the mimosa-robinia liaison, and it is not unduly surprising to find that the apt name of *Acaciol* has been bestowed upon the synthetic condensation product of anisic aldehyde (*p*-methoxy-benzaldehyde) and methyl anthranilate.

As presented in the form of the syrupy yellow absolute, the mimosa odor is compacted, but on dilution with appropriate solvents, several qualities begin to manifest themselves, outstanding among which is the slightly ylang-like, mellifluous sweetness. After drying for a few hours upon a testing blotter, a mellow, powdery cadence becomes evident, and in a day or so a peculiarly enanthic residual note appears, suggesting wine lees.

These qualities find ideal employment in covering the initial earthy odor of all talcum powder products, but at the same time a remarkable property of Mimosa is its ability to heighten the floral character of whatever flower elements there may be in a perfume.

Although mimosa absolute will rapidly soften the harsh edges and mitigate the peculiar organic chemical odor of acetophenone, styralyl acetate, methyl *p*-cresol, benzylidene acetone and similar powerful fragrant bodies, it is also particularly useful in providing the middle notes of the modern citrus-ionone-rose, aldehydic ionone-vetivert, ylang-ionone-olibanum and similar types of bouquets, yet its greatest potential lies in another direction. Its liaison with clary sage provides a base which is able to confer a remarkable degree of "naturalness" upon simulations of floral ottos.

Curcuma Oil

Curcuma root, a drug used in the East as a food-seasoning, is derived from a Ginger plant (Zingiberaceae —*Curuma longa L.*). Curcuma is cultivated in India, Indochina, Malaya and the Southern part of China, the region where supposedly the best qualities grow. Curcuma root is also known as yellow root, yellow ginger, Safran de Inde, Indian Saffron, etc.

Rasped curcuma root yields by distillation with super-heated steam, 2-6 per cent of essential oil having the spicy curcuma smell. It is possible to obtain curcumin in a yield of 0.2 to 0.5 per cent by extraction of the roots used for distillation with alkalies or with hot alcohol or with benzene. It forms yellow-red prisms with a melting point of 178° C. The non-alkali solutions have a green fluoresence, the alkali ones a red.

The essential oil consists mainly of a mixture of a monocyclic hydroaromatic ketone, turmerone and an aromatic ketone, dihydro-turmerone. According to earlier statements, by washing the fraction of curcuma oil boiling at 155 to 160 at 1 mm with alkalies or acids one obtains the ketone curcumone (a 2-methyl-2-p-tolyl-methyl ketone) $C_{12}H_{16}O$ having a sharp ginger like smell. The racemic form of this body can be obtained synthetically. The active constituent of Curcuma Domestica is an essential oil together with the coloring matter curcumin. The essential oil contains up to 85 per cent of cyclo-isoprene-myrcene, some camphor and 5 per cent of a tertiary alcohol, p-tolyl-methyl-carbinol. A. Burger (*P.E.O.R.* 49: 801, 1958) obtained from freshly cut curcuma roots a nearly colorless oil by steam distillation which did not fluoresce and had no ginger-like odor but smelt more woody with an impressive flowery after-note.

Zdravets Oil

The zdravets (*Geranium macrorrhizum*) belong to the family Geraniaceae some of whose members are essential oil yielding plants. In the first position ranks the Pelargonium genus whose home is South Africa. An essential oil is derived from its species, transplanted and disseminated along the Mediterranean, which is incorrectly called geranium oil. Of the Geraniceae genus only the zdravets is used for obtaining an essential oil, the so-called zdravets oil, also known as Bulgarian geranium oil.

At ordinary temperature zdravets oil is a mixture of crystal and liquid portions. With rapid cooling fine crystals are obtained, among which the liquid part is included, while with slow cooling the solid portion forms large, long, flat-prismatic crystals—about 2/3 of the volume of the total oil, on which the liquid portion rests. When heated, the solid part begins to melt at about 32°C and dissolves completely at 45-52°C. The liquefied oil is green to greenish brown in color, while the cohobated oil is more yellowish brown. It has a pleasant strong odor, with a slight resinous note, differing considerably from the plant's odor.

The oil aroma components are contained in its liquid part. The properly purified solid part is odorless. Exposed to air and light, the oil slowly turns from green into brownish green, its acid number increases and the odor assumes a pronounced resinous note.

Investigations by I. Ognyanov and D. Ivanov (*P.E.O.R.* 49: 617, 1958) showed that zdravets oil contains the following groups of compounds: 52 per cent of germacrone, seven per cent of terpene compounds terpinolene and gamma terpinene, 11 per cent of sesquiterpene hydrocarbons alpha elemene and ar-curcumene, 17 per cent of sesquiterpene ketones beta elemenone, 10 per cent of sesquiterpene alcohols which may include elemol, three per cent of polymeric substances and traces of acidic and terpene carbonyl compounds. The composition of the oil is thus quite distinctive and very different from that of geranium oil. It is obtained from various pelargonium species which belong to the same plant family as the zdravets. The zdravets oil is more nearly similar to the oils rich in sesquiterpene compounds obtained from resins and balsams of sandalwood, cedar and other oils.

The odor of zdravets oil is due to substances in the liquid portion of the oil. The base note due to sesquiterpene oxygen compounds is shaded and softened by sesquiterpene hydrocarbons and terpenes. The full and original aroma of the oil can be applied to the modification of various perfumes to give an exotic touch. The high proportion of oxygenated sesquiterpene compounds makes the oil a good fixative.

Methallea

A new Methyl Ionone specialty developed in the Dodge & Olcott Laboratories, Methallea is a straight chemical body of very fine fragrance, which maintains a constant note throughout its dry out period and which can be used to advantage in any perfume. It can be substituted for Methyl Ionone Standard and/or Alpha Beta mixtures to improve almost any odor, and is available for immediate delivery.

SPOTLIGHT QUALITY... With Harchem's Century Brand Stearic Acid

▲ A clean, slow burning candle demonstrates the quality and stability Century Brand Stearic Acid puts in your product.

Good ingredients make good products. Whether you make lipsticks, lotions or creams, pharmaceuticals, soaps or candles, the quality of stearic acid you use will determine the quality and the ultimate sales success of your product.

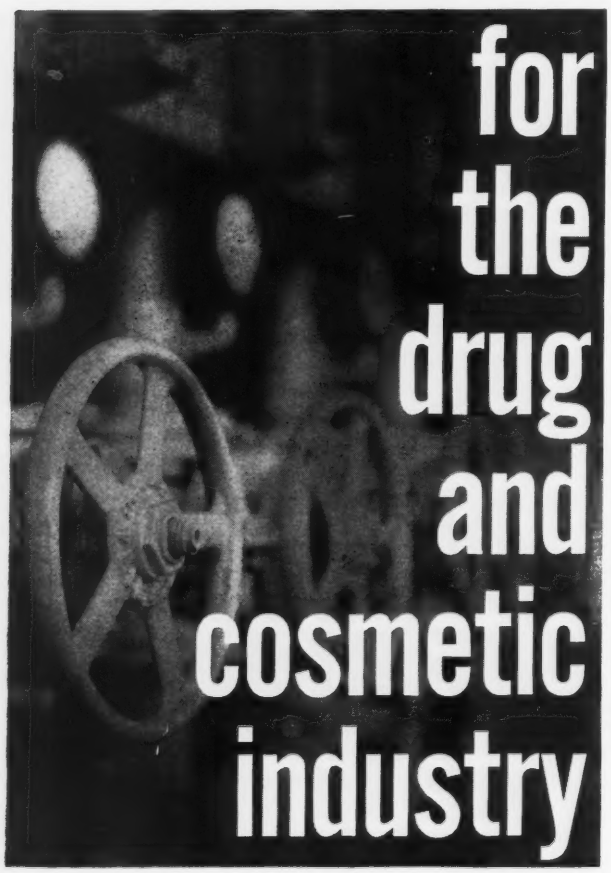
Candles are a good case in point. Slow burning candles must burn cleanly, white candles must not yellow and colored candles must hold their true shade. These qualities cannot be realized without the color and oxidation stability found in Century Brand Stearic Acid.

In addition to single, double and triple pressed grades of Stearic Acid, Harchem makes other animal and vegetable fatty acids. Write on your company letterhead for a copy of our new publication that gives the specifications of all these Century Brand Fatty Acids. Ask for Bulletin H-31.31

HARCHEM® CENTURY BRAND

HARCHEM DIVISION

WALLACE & TIERNAN, INC.
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY
IN CANADA: W. C. HARDESTY CO. OF CANADA, LTD., TORONTO



for the drug and cosmetic industry

CHEMICAL INTERMEDIATES
acetaldehyde
acetanilide
acetic anhydride
benzoquinone
isobutyraldehyde

STABILIZERS
Tenox antioxidants for Vitamin A and such oils and waxes as paraffin, mineral oil and lanolin

PLASTICIZERS
dimethyl phthalate
diethyl phthalate

SOLVENTS
acetic acid
acetone
ethyl acetate
ethyl alcohol
isobutyl acetate
isobutyl alcohol
isopropyl acetate

HEMOSTATIC AGENT and ADSORBENT
oxidized cellulose

MISCELLANEOUS
triacetin
tributyrin

For samples of these Eastman chemicals, call or write our nearest sales office.

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tennessee; Atlanta, Ga.—3133 Maple Drive N.E.; Chicago (Skokie)—4200 Dempster St.; Cincinnati—1626 Carew Tower; Cleveland—13212 Shaker Square; Framingham, Mass.—65 Concord St.; Greensboro, N.C.—435 Jefferson Standard Building; Houston—1300 Main St.; New York—260 Madison Ave.; St. Louis—10 S. Brentwood Blvd. West Coast: Wilson Meyer Co., San Francisco—333 Montgomery St.; Los Angeles—2060 S. Garfield Ave.; Portland—520 S.W. 6th Ave.; Salt Lake City—73 S. Main St.; Seattle—318 Queen Anne Ave.

Eastman CHEMICAL PRODUCTS, INC.
KINGSPORT, TENNESSEE, subsidiary of Eastman Kodak Company

Skin Research

Skin Physiology

The material below is from the survey for 1957 and 1958 by R. Kooij in *Dermatologica*, vol. 117: 478, 1958

Chemistry and Histochemistry

Windhorst, Foster described a modified technique for chromatography of the whole skin surface fat and subsequent colorimetric determination of the free and esterified sterols. In the scalp surface fats, total sterols and free sterols were found to have the lowest concentration in balding men, and the highest concentration in women, with nonbalding men occupying an intermediate position. *Harber* et al. used the "monomolecular layer method" for assaying the quantity of lipids on the human skin surface, in combination with gravimetric determinations of the lipid quantity in a series of healthy individuals. It was found that the "spreading index," i.e. the square centimeter area of water surface covered by one microgram of lipid, differs for lipid samples collected from a given skin area in different individuals and also for samples obtained from different skin areas in one and the same subject.

Rockl, Spier, Pascher determined the influence of water-soluble substances of the horny layer on bacteria. *Schultheiss* studied the alkali resistance and the alkali neutralization time.

At the 23rd meeting of the German Dermatological Society, held in May 1956 at Vienna, *Steigleder* reported on the histochemistry of the epidermis and its appendages, *Braun-Falco* on the histochemistry of the connective tissue, *Spier, Caneghem* on the histochemistry of keratinization, *Klingmuller* discussed the value of histochemical and biochemical investigations in metabolic studies. *Stuttgen* et al. reported on proteolysis of normal and pathological skin by endopeptidases, *Thiess* on the occurrence of cholinesterase in the human skin, and *Stuttgen, Wust* on histochemical studies on blister formation.

Cruickshank et al. described an extremely sensitive and reproducible method for measuring the isocitric dehydrogenase activity of human epidermis *Rony* et al. studied the effects of rabbit skin homogenates on the autoxidation of glutathione and cysteine. It was found that the effects varied from marked inhibition to marked acceleration. The possible significance of sulfhydryl oxidase inhibitors in the regulation of keratinization was discussed and a theory proposed concerning the close relationship between the rate of pigment production and the rate of keratinization during the growth of colored hair.

Metabolic and Other Processes

Leibsohn et al. studied the respiration of human skin by the Warburg technique. The studies involved mechanical separation of the epidermis from most of the dermis and calculation of the respiration of the isolated epidermis. *Szakall* reported on the loss of hygroscopic water-soluble compounds of the human horny layer. *Jansen, Rottier* showed in simple stretching experiments, done on strips of abdominal skin, that the elasticity of skin is independent of age or sex, when the loads were less than those applicable at a normal clinical examination. *Kimmig* reported on the significance of vitamins for the skin, and *Schnitzer* on heparin and skin in the 23rd meeting of the German Dermatological Society. *Lorincz* presented details of a skin desquamating machine which rapidly and conveniently carries out the Wolf-Pinkus adhesive tape stripping technique. *Davis, Lorincz* described an improved simple techniques for microscopic observation of the superficial vasculature of the skin in which clarity of visualization is greatly aided by first stripping away the outer layers of the epidermis with repeated applications of adhesive tape.

Sebaceous Glands. Kligman, Shelley carried out experiments which negate the concept that the surface lipids control the output of sebum by the sebaceous glands. The major quantity of sebum on the forehead is produced by a unique type of pilosebaceous unit which is essentially a huge gland with a rudimentary hair. The concept that sweating promotes the delivery of sebum was not sustained by controlled experiments. *Brun, Ritz* found that the sebaceous film on the skin of the back is significantly less in pregnant women than in non-pregnant women. *Greenberg* et al. showed that intradermal injections of a carrot-oil water-solubilized suspension of carotene were concentrated by the sebaceous gland cells. Detectable amounts of vitamin A were visualized within the sebum at the neck of the gland, in the excretory duct and upon the skin surface.

Peiss, Randall studied the relationship between skin hydration and the suppression of sweating. Graded sweat suppression occurred following immersion ofthe palm in dilute saline solutions (1 to 7 per cent NaCl) but did not occur in concentrated solutions (10 to 20 per cent NaCl).

The architectural arrangement of keratin around the poral orifice of the sweat duct, together with its hydrophilic properties, suggest that the degree of sweat suppression is related to the uptake of water by keratin. This results in swelling of

the keratin ring and mechanical occlusion of the sweat duct. *Peiss, Randall* also studied the effect of vapor impermeable gloves on evaporation and sweat suppression. *Lobitz, Dobson* selectively injured the secretory coil of the human eccrine sweat gland and allowed it to regenerate. It was found that the cells of the secretory coil have the ability to make new secretory cells, basal and luminal cells of the sweat duct, a spiralling "epidermal sweat duct unit" and mature epidermal prickle cells both inside and outside the coil.

Pigmentation. Kropp examined the behavior of the melanocytes (clear cells) of human epidermis during the first 72 hours of forced epidermal regeneration induced by stripping with plastic tape. The experiments brought no evidence of any genetic relationship between the melanocytes and the Malpighian cells. *Magnin, Rothman* found that inhibition of melanin formation by epidermal extracts is greater than can be accounted for by its sulfhydryl content. 60-70 per cent of the inhibition can be attributed to sulfhydryl groups while 30-40 per cent must be ascribed to some unknown substance or substances. *Kukita* studied changes in tyrosinase activity during melanocyte proliferation in the hairgrowth cycle, and according to the author, it appears that tyrosinase activity is related to melanocyte proliferation. *Breatnach* showed that there is in a freckled human epidermis a direct correlation between the tyrosinase activity of individual melanocytes with exogenous tyrosine, and the amount of preformed melanin in a given area of the epidermis.

Physical Process

Meyer wrote a monograph on "Ultraviolet rays in medicine." *Miescher* studied from the clinical and histological point of view the classical reaction of the skin to different wavelengths. Whereas epidermal cellular cytotoxic disturbances are noted in the classical reaction provoked by short ultraviolet rays, the long ultraviolet rays bring about principally an injury of the capillaries, with necrosis of the endothelial cells. The visible rays and infrared rays act exclusively by a caloric effect and provoke necrosis. The photo-allergic reactions are either of the urticarial type or of the eczematoid delayed type. *Epstein, Brunsting* investigated the effect of topical application of chlorpromazine on the erythema response to ultraviolet light. They found that these solutions acted as filters and thus reduced the expected erythema response. *Langhof* carried out investigations on the redox potential of epidermal layers. *Laden* et al. assume from their investigations with the electron microscope of many sections of the human epidermis, that kerato-hyalin granules are the precursors of keratin. *Perry* et al. used the galvanic skin response for evaluating the dose-response effects of varying oral dosages of anticholinergic drugs. Orally administered Banthine appeared to have a greater effect on the GSR level than Pro-Banthine or Prantal. *Schaffer* described a new type of electrodermatogram and reported on the influence of antihistaminic thereupon.

Methoxsalen

Earlier observations by Fitzpatrick et al. and others suggested that methozsalen, when taken internally and followed by exposure to sunlight, produced increased pigmentation and decreased burning of the skin. Controlled field trials in Arizona proved that pigmentation of the skin is augmented by the oral use of this drug. However, the recent blind study by Daniels et al. casts doubts on the effectiveness of this drug when taken in a dosage of 10 mg. The results of present investigation by O. C. Stegmaier (*A.M.A. Arch. Dermatol.* 79: 148, 1959) which compares the effects of a sugar placebo and 20 mg. methoxsalen, indicate that methoxsalen in this high dose augments the tanning response.

Pre-solar - ingested methoxsalen when employed in sufficient dosage in comparison to a placebo will cause increased tanning (98 per cent confidence level) and decreased burning of the skin (90 per cent confidence level).

Probably the most likely explanation of the differences resulting from these two experiments is the difference in dosage employed. Daniels' group compared the results of largely 10 mg. of methoxsalen, while in this experiment 20 mg. was administered.

Although the present method of treatment of vitiligo with methoxsalen is not entirely satisfactory and has many shortcomings, it is still the most effective yet reported. Although none of the patients treated by J. A. Elliott (*A.M.A. Arch. Dermatol.* 79: 237, 1959) have become completely repigmented, 67 per cent have stated that the results justify the time and money expended.

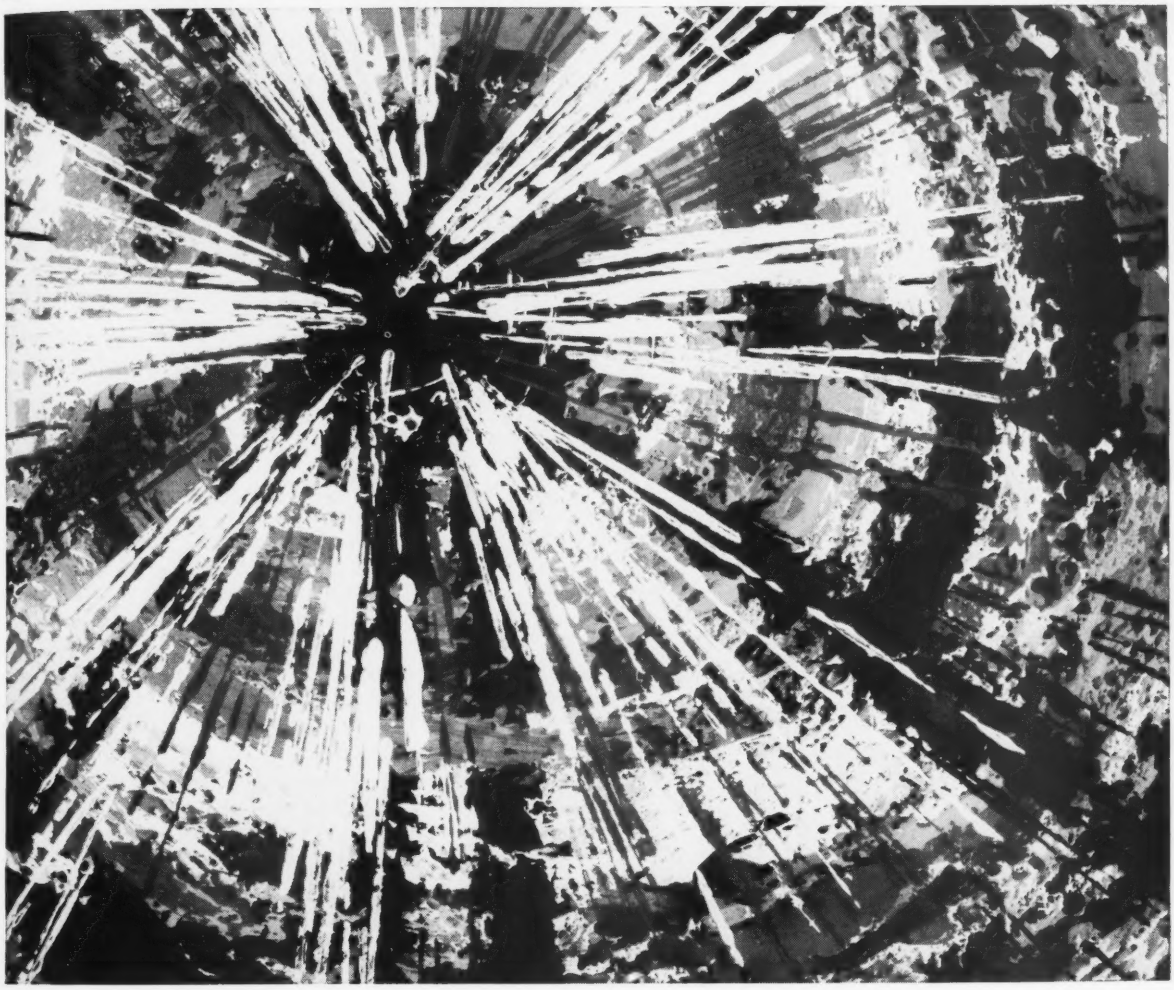
The hands and feet do not repigment readily and those patients who have their major involvement in either or both of these areas are not good candidates for this method of treatment. Vitiliginous areas do not repigment in a few days or weeks, but require months of intensive treatment with methoxsalen and exposure to sunlight, and patients who cannot devote a minimum of 30 minutes near the middle of each day to sun exposure are poor candidates for treatment.

Treatment probably must be continued indefinitely, although its intensity can be reduced to a maintenance level once the desired degree of repigmentation is attained.

Vitiliginous areas which become completely repigmented do not seem to retain this pigment any better than areas which are not completely repigmented.

There are still some questions which must be answered if methoxsalen is to be used over a long period of time in a given person. Will methoxsalen prevent or promote carcinogenesis? Animal studies have indicated the latter, although there is evidence in humans to suggest the former, and large-scale studies are being conducted in Texas in an effort to answer this question. What effect does methoxsalen have on light sensitivity? Most evidence points to protective properties due to an increase in the stratum corneum, development of a stratum lucidum, and retention of melanin. However, after treatment of their vitiligo with methoxsalen, two patients have developed, for the first time, a polymorphous light eruption which has continued to recur with exposure to sunlight after methoxsalen treatment was stopped. What chances are there of liver damage from use of methoxsalen? At least one patient has developed evidence of liver damage while taking methoxsalen, although the relationship is not definitely established.

EXPANDING POSSIBILITIES



FOR... WHITE OILS!

The two most important requirements for the white oils and petrolatums you use in your products are *top quality* and *consistent uniformity*. And that's the guarantee you get from Continental Oil Company . . . Conoco. Each of our products is quality-controlled to exceed U.S.P. and N.F. specifications. Here is a partial list of Conoco products you may want to use:

RAMOL 500 U.S.P. – Superior suspension of lanolin . . .

RAMOL 350 U.S.P. – Pharmaceuticals – Internal Lubricants . . .

RAMOL 185 U.S.P. – Drugs, Hair Oils, Cosmetics, Laxative Emulsions, Sun-Tan Lotions . . .

RAMOL 85 N.F. – Cosmetic Creams–Lotions, Ointments, Hair Oils, Creams, Sunburn Lotions, Baby Oils . . .

KREMOLS® – Cosmetics, Toiletries, Hair Oils, Brilliantine . . .

BRILLOL® – Exceptionally low-viscosity for toiletry preparations . . .

STARLIGHT® – Hair Oils and Toiletry Preparations.

Why not investigate the possibilities offered to you in Conoco's complete line of white oils and petrolatums? We'll be glad to supply you with samples.

CONTINENTAL OIL COMPANY

Forest Avenue, Englewood, New Jersey, U. S. A., LOwell 8-8200

Chicago: Prudential Bldg., WHitehall 3-0944 • New Orleans: Commerce Bldg., JAckson 2-0664

European Sales Office: P. O. Box 1207, Rotterdam, The Netherlands

Industry's Books . . .

Accepted Dental Remedies, *24th Ed., 1959, 210 pp., American Dental Association, Chicago, paper binding,* **$3.**

This new edition contains expanded sections on dental therapeutics. The monographs have been reviewed by the Council and its consultants and have been rewritten in the light of current scientific information. As in earlier editions, Accepted Dental Remedies 1959 includes information concerning drugs of recognized value in dentistry, drugs of uncertain status more recently proposed for use by the dentist, and some drugs once employed extensively but now generally regarded as obsolete. Only brands of drugs which the Council has classified in Group A are included in the book.

The Chemistry And Technology Of Leather, Volume II—Tyes Of Tannages, *Edited by Fred O'Flaherty, William T. Roddy and Robert M. Lollar, Tanners' Council Laboratory, University of Cincinnati, American Chemical Society Monograph Series No. 134, 554 pp., Reinhold Publishing Corp., New York, (1958), cloth,* **$16.50.**

This is the second volume of a four-volume monograph covering every technical aspect of tanning and leather manufacture. Volume 2 includes the chemistry, processing and mechanism of tannery and the technology related to it. The first volume described preparation for tannage, and subsequent volumes will describe the role of leather finishing operations in establishing the utility of leathers, finishing procedures for various types of leather, and methods of evaluating these properties.

Organic Syntheses, Volume 38, *1958, 120 pp., John Wiley And Sons, Inc., New York, cloth,* **$4.**

This is an annual publication of satisfactory methods for the preparation of organic chemicals. Included in this new edition are 31 chemicals with as many chemists as contributors.

Acetophenetidin, A critical Bibliographic Review, *by Paul K. Smith, Ph.D., Professor of Pharmacology, The George Washington University School of Medicine, 180 pp., Interscience Publishers, New York, (1958), cloth,* **$5.75.**

The present monograph is the fourth in a series of critical reviews of the literature on analgesic and sedative drugs. The first volume dealt with acetanild, the second with salicylates, the third with antipyrine; the fifth, now in preparation, deals with bromides. Acetophenetidin — Contents — I. History. II. Physical and Chemical Properties. III. Estimation in Biological Material. IV. Fate of Acetophenetidin in the Body. V. Metabolism and Intermediary Products. VI. Antipyretic Action. VII. Analgesic Action. VIII. Other Therapeutic Uses. IX. Effects on Blood and Organ Systems. X. Toxicology. XI. Tolerance and Habituation. XII. Summary. Bibliography. Index.

Pressurized Packaging (Aerosols), *by A. Herzka, B.Sc., Research Department, The Metal Box Co., Ltd., and J. Pickthall, F.R.I.C., Chief Chemist, Polak & Schwarz, 411 pp., Academic Press Inc. New York, (1958), cloth,* **$12.**

This is the first comprehensive book on the subject, written by two of Britain's leading authorities. These chapters deal with propellants, containers, valves, filling methods, laboratory procedures, emulsified systems, and perfumes. There is, in addition, a complete section containing more than 200 formulations covering such widely different items as food, insecticides, cosmetics, paints and numerous other products. Although technical problems occur with all types of packages, those which arise with pressurized packages are many and complex and they must be solved before the marketing of any particular product is undertaken. This reference book not only summarizes the various difficulties likely to be encountered but also indicates how they may be overcome.

Disinfection And Sterilization, *by G. Sykes, M.Sc. (Lond.), 396 pp., D. Van Nostrand Co., Inc., New York, (1958) cloth,* **$10.75.**

In this book a considered appraisal is presented of the progress made, particularly over the last two decades, in the wide and important subjects of disinfection, sterilization and antisepsis. The book is divided into six parts. Part I deals with the theory of disinfection and methods of testing both disinfectants and antiseptics. Each of these chapters shows the developments which have taken place in methods of testing, and describes critically the various techniques officially recommended both in Great Britain and in the United States. Part II is concerned with methods of sterilization; Chapter 5 dealing with the effect of moist and dry heat, and including a section on the design and use of the steam sterilizer; Chapter 6 with the rapidly developing topic of radiation sterilization; and the subsequent chapters with sterilization by filtration, gaseous disinfection and the effects of physical factors such as cold, osmotic pressure, desiccation, cellular distintegration, etc. Part III is devoted entirely to air disinfection and sterilization and Part IV to the increasingly important topic of the disinfection of viruses. Part V (comprising chapters 12 to 16), deals with the various groups of compounds used as disinfectants and antiseptics. The compounds discussed include phenols, soaps, alcohols, formaldehyde, the acridines, quaternary ammonium compounds, the halogens and the heavy metals such as silver, mercury and copper. The last chapter in the book is concerned exclusively with methods of preservation.

Laminated Plastics, *by D. J. Duffin, Continental-Diamond Fibre Corp., and Charles Nerzig, George S. May Co., 254 pp., pocket size, Reinhold Publishing Corp., New York, cloth,* **$5.75.**

This is a survey of the manufacturing, fabrication, and applications of high and low-pressure laminates. It covers the various types and grades of raw materials and resins used; their physical characteristics; and includes numerous tables of mechanical, chemical, and electrical properties as related to various kinds of industrial and consumer applications. The book is well illustrated.

Lautier Fils

"A STANDARD OF QUALITY SINCE 1795"

GRASSE, FRANCE

ESSENTIAL OILS

NATURAL FLOWER ABSOLUTES

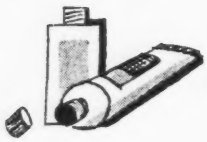
CONCENTRATED NATURAL FIXATIVES

SYNTHETIC AROMATICS

LAUTIER FILS, INC.

321 FIFTH AVENUE. NEW YORK 16. N.Y.

GRASSE • PARIS • LONDON • BEYROUTH • ST. LOUIS • CHICAGO • RIO DE JANEIRO



Advancing Therapy

Demethylchlortetracycline

The isolation and identification of a new antibiotic agent, demethylchlortetracycline, was reported by McCormick and his co-workers in 1957. Demethylchlortetracycline was produced by a mutant strain of *Streptomyces aureofaciens* Duggar. Structure studies showed that the new compound differed from chlortetracycline and from oxytetracycline and tetracycline by the absence of a methyl group in the 6 position of the basic tetracycline molecule.

A striking chemical feature of demethylchlortetracycline is its remarkable stability to acid and alkali as compared to its methyl homologues. The in vitro antimicrobial activity of the compound falls within the range of the tetracycline antibiotics now used in clinical therapy.

Studies in animals showed that demethylchlortetracycline has a very low order of toxicity; likewise it does not cause emesis in the dog, is absorbed from the gastrointestinal tract, and is excreted slowly in the urine. Preliminary evaluation in human subjects showed the compound to be well tolerated when administered orally in single 250 mg. amounts.

The present study by W. M. Sweeney, S. M. Hardy, A. C. Dornbuch and J. M. Ruegsegger (*Antibiotics and Chemother.* 9:14, 1959) was designed to investigate the absorption and excretion of demethylchlortetracycline and to compare it with its methyl homologues, tetracycline and chlortetracycline.

Demethylation of chlortetracycline does not alter absorption as evidenced by the similar serum concentration of chlortetracycline and demethylchlortetracycline at one and at three hours after the oral ingestion of a single dose of antibiotic. That demethylation of chlortetracycline results in a slower rate of antibiotic decline in the plasma is indicated by the higher six hour serum concentration of demethylchlortetracycline when compared with chlortetracycline and by the demonstration of serum antibiotic activity for as long as 120 hours after oral administration of demethylchlortetracycline. This feature sharply distinguishes this compound from the other tetracyclines studied, neither of which produced antibiotic activity for as long as 72 hours after ingestion.

The persistent serum antibiotic activity after demethylchlortetracycline could possibly be explained by its increased resistance to chemical degradation. However, subsequent to the present study, Kunin and Finland showed that demethylchlortetracycline has a significantly longer in vivo "half-life" than does tetracycline and further demonstrated that demethylchlortetracycline is cleared by the kidney only 43 per cent as rapidly as tetracycline. This finding suggests that the slow rate of decline of demethylchlortetracycline in the plasma is due to its relatively low renal clearance.

This combination of chemical, pharmacological, and antimicrobial advantages suggests that demethylchlortetracycline merits trial in the treatment of sensitive microbial infections in man.

Tetracyline Synthesis

Research chemists J. H. Boothe, A. S. Kende, T. L. Fields and R. G. Wilkinson at Lederle Laboratories Division, American Cyanamid Company have succeeded in totally synthesizing a derivative of demethylchlortetracycline.

The significance of this synthesis is that it may pave the way for the construction of new antibiotics that cannot be derived from living organisms. It also proves that the structures assigned to DMCT and other tetracyclines through degradation studies are correct.

This scientific accomplishment required approximately 30 steps and took three years of intense research. The synthetic compound has not been tested in animals.

Oral Antidiabetic DBI

A two-day medical symposium was described by Dean Stanley W. Olsen of Baylor University College of Medicine, as a means of bridging the gap between research and the general use of a new oral drug for treatment of diabetes.

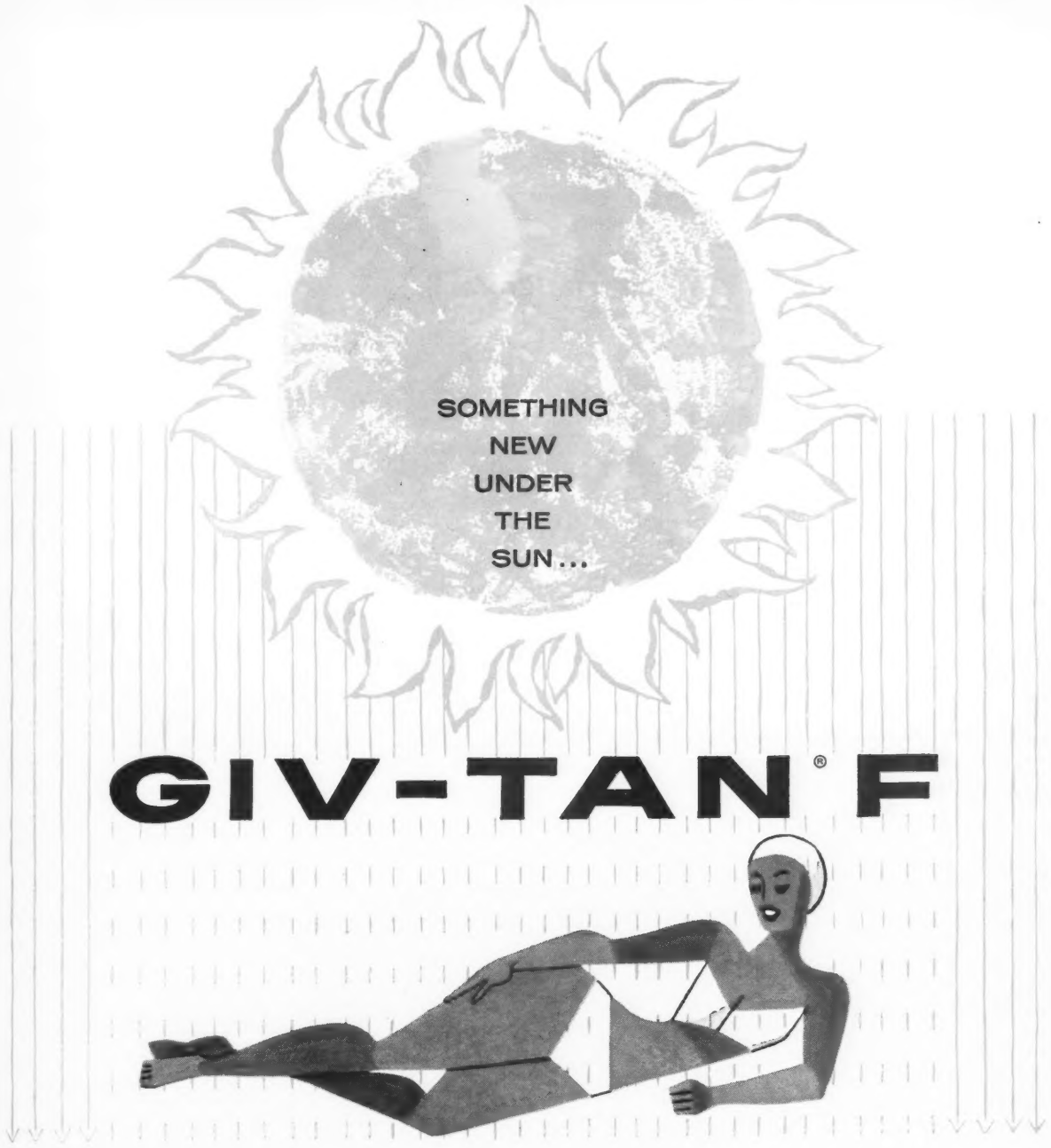
The symposium was devoted to the examination of laboratory and patient studies on a new oral drug, known as phenformin, or DBI.

Tested for the past two and one-half years on all types of diabetes, DBI is one of a group of compounds known as the biguanides. It differs chemically and in action from the oral drugs now in use for treatment of diabetes.

Among the specialists participating were: Drs. Alexander Marble, Leo P. Krall and Priscilla White of Joslin Clinic, Boston; Drs. Max Miller, and James W. Craig, Western Reserve University School of Medicine, Cleveland; Dr. Arne Wick, San Diego State College; Dr. Donald W. Clarke, Charles H. Best Institute, Toronto; Dr. Thaddeus Danowski, University of Pittsburgh School of Medicine; Dr. Martin G. Goldner, Jewish Chronic Disease Hospital, Brooklyn, N. Y.; Dr. Julius Pomeranze, Bird S. Coler Hospital, N.Y.C.; Dr. Samuel B. Beaser, Beth Israel Hospital, Boston; Dr. Henry Dolger, Mount Sinai Hospital, N.Y.C.; Dr. Bruno Volk, Isaac Albert Research Institute, Brooklyn, N.Y.; and Drs. Robert S. Radding and Harold L. Dobson of Baylor U. School of Medicine.

The symposium was sponsored by Baylor College of Medicine in association with the Houston Society of Internal Medicine and the Houston Area Diabetes Association, with the support of U. S. Vitamin & Pharmaceutical Corp., New York, developers of DBI.

Dr. Robert E. Tranquada, Univer-



GIV-TAN® F

GIV-TAN F is a new sunscreening agent developed by Sindar's research laboratories to increase the efficiency and sales appeal of your suntan product. It enables you to provide maximum sunburn protection—and the deep, lasting, bronze-like tan your customers want—at savings up to 50%!

GIV-TAN F is easy to use. Being a miscible oil, it dissolves and mixes readily in all media normally employed for sunscreen preparations. As an oil it offers special qualities that enhance the cosmetic elegance of your product.

GIV-TAN F is stable in solution and under exposure to sunlight... proved in field and laboratory tests... harmless to fabrics... non-irritating to the skin. It is extremely economical in any type of suntan preparation or sunburn preventive—in hydro-alcoholic solutions, oils, lotions, creams and other products.

We are ready to give you complete information on GIV-TAN F and full cooperation in using it to the best advantage in your preparations.

SINDAR®
Corporation
321 West 44th Street
New York 36, N. Y. .

Grisambrol is the product of patient research and skillful reconstruction of the components of ambergris, long prized and sought for its warm, earthy odor and fixative properties. Now this desirable addition to any perfume extract, soap or powder is always available, ever stable. With Grisambrol your range in achieving new notes, new effects is greatly increased. By the use of Grisambrol you give greater depth and warmth to your products, enhance their lingering effect on the skin, and extend their shelf life. Samples of Grisambrol and technical data in respect to its use available on request.

FIRMENICH & CIE
SUCCESSEURS DE
CHUIT NAEF & CIE.
GENEVE SUISSE

FIRMENICH INCORPORATED

250 WEST 18TH STREET • NEW YORK 11
CHICAGO OFFICE: 612 NORTH MICHIGAN AVE.
FIRMENICH OF CANADA, LIMITED, 348 WALLACE AVE. • TORONTO
GENEVA • PARIS • LONDON

· **NO LONGER NEED THE SHORE BE SEARCHED**

now that FIRMENICH
achieves the complete synthesis
of ambergris in GRISAMBROL

sity of California Medical Center, Los Angeles, reported that the primary activity of DBI is to promote increased peripheral utilization of blood sugar by body tissue. It was found that DBI did not promote the liver storage of glycogen, therefore diabetic patients require some insulin, either from the pancreas or by injection, for management of the disease with DBI.

That DBI successfully lowers blood-sugar levels in diabetic patients but does not have this effect in healthy persons was pointed out by two clinicians, Dr. Stefan S. Fajans of the University of Michigan Medical School, Ann Arbor, and Dr. Leonard L. Madison of the University of Texas Southwestern Medical College, Dallas.

Dr. Thomas C. Skillman of the Ohio State University Department of Medicine, Columbus, said long term studies, representing 83 patient-months of observations, showed no instances of harmful reactions on vital organs, including liver, thyroid, adrenal gland and bone marrow function.

Dr. Stanley S. Bergen, Jr., of the Department of Medicine, St. Lukes Hospital, New York City, also reported an absence of toxic effects. Dr. James W. Craig, Western Reserve University, Cleveland, discussed the effects of DBI on body utilization and metabolism of sugar.

Dr. Frank S. Perkin said that DBI, in combination with injections of insulin, produced more stable control of complicated labile or brittle diabetics. This group often cannot be properly managed by any type of insulin Regime alone. With DBI, reduction in dosage of insulin from ten to 50 per cent also was possible.

Patients who react poorly to tolbutamide can be successfully managed with added small doses of DBI, according to Dr. Henry Dolger. He said that one group of twenty-five adult patients not responding to tolbutamide was successfully treated on the combined regimen. Another group of seventy-five patients with poor response to tolbutamide after an initial success, regained excellent control when similar small doses of DBI were added. Eventually the dose of tolbutamide could be reduced to 1 gm. daily along with a total of 50 mg. of DBI.

Dr. Elmer A. Kleefield, New York Medical College, used the new drug in treatment of diabetics suffering from severe tuberculosis. Management of eight of eleven patients changed from fair or poor to good or excellent on a combination of DBI and insulin. An average of about fifty per cent less insulin was possible in these patients.

Dr. William Pearlman, Mercy Hospital, Wilkes-Barre, Pa., treated fifty-six patients ranging in age from 5 to 75 with DBI alone or in combination with insulin for up to fourteen months. He said that DBI was effective not only in the less severe adult but also in the problem cases of diabetes.

Also on the panel, which was moderated by Dr. Samuel B. Beaser were Dr. Maurice Protas, Doctors Hospital, Washington, D. C., who discussed the role of endocrine disturbances in diabetes; Dr. Robert S. Radding, who pointed out that DBI does not effect electrolyte metabolism in the severe patient; and Dr. Priscilla White, who indicated the possibility that DBI may prolong the period of remission in juvenile diabetics.

Dr. Robert S. Baldwin, Marshfield Clinic and St. Joseph's Hospital, Marshfield, Wisc., reported on the use of DBI in 27 patients under observation for up to six months. Their ages ranged from three years to 84.

"We have been particularly impressed with its success in the children and so far have had good to excellent results with all six patients under 14 years of age in whom it has been tried," he said.

Dr. Baldwin reported that seven patients were taken off the drug because of nausea and vomiting while three patients who had those symptoms were able to continue with DBI therapy after meals rather than before. In three cases with degenerative vascular complications the drug was ineffective, while in the balance of the series it produced good to excellent results.

Dr. Harold L. Dobson reported that DBI was effective for stable adult patients and useful in "problem" patients, including juveniles, unstable diabetics and those with reactions to insulin. Of 93 patients, 43 were successfully treated with DBI alone and 22 with the drug and insulin, he said. Of the balance, ten were lost to follow-up, four died from unrelated causes and eleven discontinued DBI because of side effects. Of the eleven, four could resume DBI therapy.

The biguanides were evaluated by Dr. Leo P. Krall in more than 300 patients for more than two years. The series was a selected difficult group with one-half of the total number being either juvenile or juvenile-onset diabetics. Less than 20 per cent were mild cases. DBI was effective in lowering blood sugar, produced a high incidence of uncomplicated side effects and showed no evidence of toxicity.

Dr. Thomas H. Lambert, Scripps Clinic, La Jolla, Calif., said DBI lowered blood sugar levels in 52 patients on restricted diets. Twenty-eight patients experienced side effects which subsided with reduction of dosage. In twelve DBI was discontinued because of these effects. Twenty-seven adult stable diabetics successfully used DBI alone and eleven unstable and juvenile patients maintained more stable control on combined therapy with insulin. Dr. Emery C. Miller of Bowman Gray School of Medicine, Winston-Salem, N. C. found that at a daily dose of 100 mg. of DBI only minimal side effects were encountered. With higher dosage the incidence of nausea and vomiting rose to forty per cent.

Dr. Julius Pomeranze reported that 87 patients over 45 years of age were treated successfully with DBI. The drug was discontinued in 26 patients because of gastrointestinal side effects and in 11 patients controlled by diet alone.

Dr. Charles Weller, Valhalla, New York, studied 71 subjects for three to eighteen months and found DBI especially effective in juvenile and unstable adult patients.

In summary, the following clinical observations with DBI were made:

Lowering of blood sugar in all types of diabetes, stable, juvenile-onset and severe cases which have not responded to other oral agents. Better control of complicated cases including juvenile and labile patients when given with insulin injections because the action of DBI is unrelated to that of insulin. Nausea and vomiting side effects in some cases.

IS FOR

CHOLESTEROL U.S.P.,

Derived from lanolin,
Pure and free.

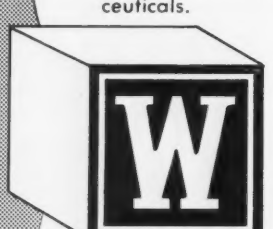
CHOLESTEROL — Our Cholesterol is U.S.P. quality and better. It is suitable for the most exacting purposes in pharmaceuticals and cosmetics.

IS FOR

VISCOLAN, T.M.

Liquid lanolin pure,
Dewaxed, deodorized,
Best for sure.

VISCOLAN is liquid lanolin at its best — clear, free of objectionable odor and color, uniform in quality. It meets TGA specifications for liquid lanolin. VISCOLAN is oil soluble and excellent in aerosols, cosmetics, and pharmaceuticals.



IS FOR

WAXOLAN, T.M.

We sing its praises,
Adds gloss and stability,
Melting point raises.

WAXOLAN is a clean hard wax separated from pure lanolin. Use it as an emollient and for gloss, grooming effects, raising m.p. and viscosity.

Here are three lanolin derivatives which can't be beat for quality and price.

Write to our Research Laboratories for additional information, samples and suggested formulations.

American Cholesterol Products
• INCORPORATED •

AMERCHOL PARK — EDISON, N. J.

(Continued from page 297)

More recently, however, the companies that write product liability policies have become increasingly alarmed at the size of the claims they are called upon to meet. One example, of course, is the Cutter incident, and there have been others, less publicized, but nevertheless substantial. I am told that recently one reputable manufacturer has been refused a renewal of his product liability policy, and is having some difficulty placing a policy with any other carrier. This company had carried insurance for many years without significant claims, until it recently ran into difficulties with a new product.

I have heard it suggested that, if the Cutter verdicts are upheld on appeal, it will become increasingly difficult for members of the drug industry to obtain adequate coverage anywhere. There seems, at present, to be no insurance market for coverage on the ten to 20 million dollar liabilities that major drug producers must consider as not beyond the realm of possibility. Whatever the result of the Cutter appeal, there are indications that premiums will rise, and that insurance carriers will be lowering limits, rather than raising them.

In the short-term future it is likely that some solution can be found through a reappraisal and revision of the traditional system of product liability insurance. However, insurers will cover only calculable risks, while the risk of product liability appears to be getting less calculable every year.

Another possible approach which deserves serious thought is in the area of disclaimer. Liability without fault is most likely to be imposed on the contract theory of implied warranty. This suggests immediately the possibility that sellers may be able to "contract out" of this kind of liabiilty by means of express language incorporated in the conditions of sale.

There has been surprisingly little litigation over the effect of warranty disclaimers in the sale of drug products and the case law on disclaimers in other fields varies widely from state to state. The Uniform Sales Act states that an express condition does not negative an implied warranty, unless it is inconsistent therewith. Therefore, as a general rule, disclaimers must be stated in rather strong and specific language in order to avoid liability under the warranties imposed in law.

Of course, there is always a business judgment to be made regarding the effect of disclaimers of warranty on sales and on the reputation and goodwill of the seller. I am not suggesting, however, that disclaimers be used indiscriminately. Rather, I am suggesting that disclaimers might be helpful in the areas where the hazards are greatest: the introduction of important new medicinal discoveries, where there is not sufficient experience to enable manufacturers to foresee all the possible effects of the product on all the possible variations of the human system.

(Continued on page 374)

Reader's Questions . . .

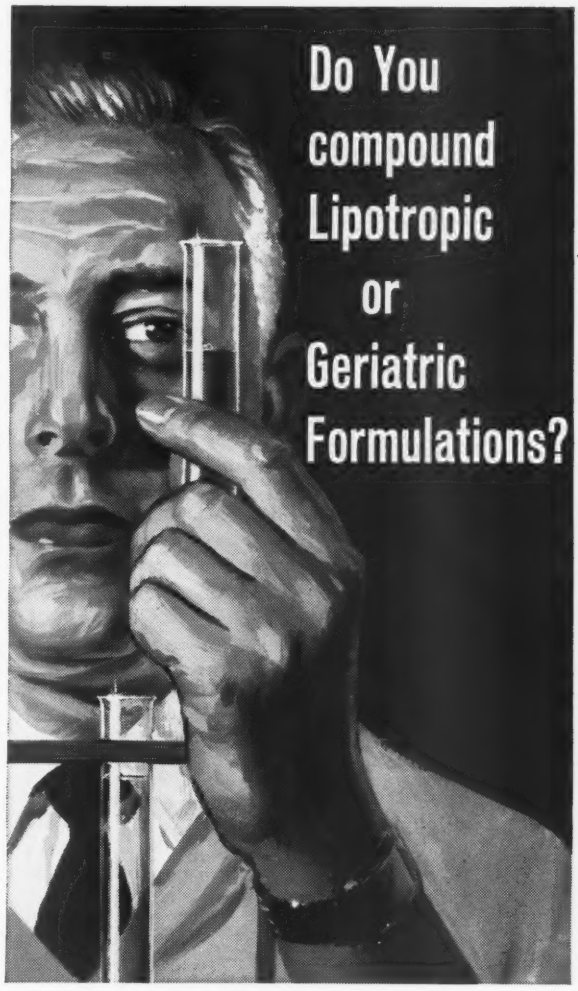
White and Iridescent Lipsticks: *The newest fad calls for white lipsticks to be used to lighten and modify shades of usual sticks on the lips. Still newer, apparently, are the iridescent sticks for special high fashion effects. Are there any special problems to your knowledge in making these sticks?*

LOS ANGELES.

White lipsticks should offer no problems. The usual base may be used but it may require some hardening to make up for missing pigment. Bromo acid and red pigments are omitted and only a small percentage of titanium dioxide should be added for whitening. Since titanium dioxide has extremely high covering power, too much will drastically effect the top shade applied. Despite the fact that this white pigment has a very small particle size, it also has a considerable tendency to form agglomerates. These must be broken up by passing the finished lipstick mass through a roller mill.

I have not had any experience with iridescent sticks, in fact, have not even examined one. My guess, however, is that the pearl essence used in nail polishes is used here. It is quite possible that excessive heat would adversely modify the crystal structure responsible for pearliness and the proper grade of the pearl is best ground into the mass at room temperature, avoiding grinding sufficient to break up the crystals. Whether the customary proportion of bromo acid and red pigments is retained in the lipstick must be determined by experiment.

At almost every level fact is catching up with and outstripping science fiction. This is now such a cliche with respect to rocket flights to the moon that I would ordinarily hesitate to bring it up. However, as an addict of the paper backs, I distinctly recall the lurid front cover, illustrating part of a decadent future society in which women used white lipsticks and wore not too much else. In the same book, I believe, body make-up changing with the light was extensively used by both sexes for party occasions.



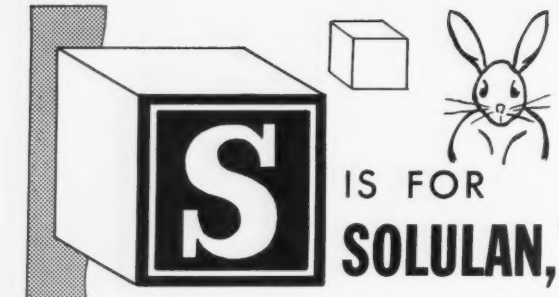
Staley's INOSITOL USP is an important factor to consider

Extensive research has indicated that Inositol is an important lipotropic agent. And is a significant factor in helping regulate the metabolism of fat and cholesterol in the system. It may exert a beneficial influence in the reduction of fatty infiltration of liver and lowering cholesterol levels. Inositol is synergistic with other lipotropic agents such as choline and is a constituent of an important group of phospholids. Thus, Inositol is a valuable consideration for use in a wide range of pharmaceutical formulations. For additional information, write to: A. E. Staley Mfg. Co., Decatur, Illinois.

Staley's®

A. E. STALEY MFG. CO., DECATUR, ILL.

Branch Offices: Atlanta • Boston • Chicago • Cleveland • Kansas City
New York • Philadelphia • San Francisco • St. Louis



S IS FOR SOLULAN,™

It answers a prayer,
A snap to dissolve,
Yet stays on the hair.

The SOLULANS are liquid, water-soluble lanolin derivatives, and much more! They form persistent emollient films which resist washing away. We have obtained this remarkable effect by giving these compounds a hydrophobic toe-hold in the shape of acetyl groups.

The SOLULANS are complex — saponification, extraction, purification, esterification, ethoxylation and acetylation are just a few of the steps involved; but these products are worth the effort. Try them and see for yourself.

The SOLULANS are completely soluble in alcohol and in water, and are powerful solubilizers for preparing water solutions of many insoluble substances such as perfumes, antiseptics, dyes, oils and pharmaceuticals.

SUGGESTED USES OF THE SOLULANS

Shampoos	Lotions and creams
Hair preparations	Topical pharmaceuticals
Alcoholic lotions	Aerosols
Shaving creams	Gels and sticks
Colognes	Anti-perspirants
Sunscreens	Deodorants
Insect repellents	Body rubs

Write today on your letterhead for technical literature and samples.

American Cholesterol Products
INCORPORATED

AMERCHOL PARK — EDISON, N. J.

(*Continued from page 372*)

Let us assume that a manufacturer introducing a new drug has words such as the following clearly printed on the package: "We believe this product to be safe if used under the direction of a physician (or in accordance with the accompanying directions). We cannot guarantee, however, that use of this product will not produce unfortunate results in some persons. This product is sold without warranty, express or implied, against injuries resulting from its use." It seems to me that a court considering such a disclaimer, and having urged upon it the benefit which the public derives from having new drug discoveries made available with the least possible delay, might well conclude that an injured plaintiff had been adequately informed of the risk which accompanies advances in drug technology, and had elected to assume that risk.

A similar disclaimer might be attached, by means of a sticker or a rubber stamp, by wholesalers and retailers, where there is no disclaimer on the label. Wholesalers and retailers who sell products in sealed containers have no opportunity for inspection, and there is an obvious unfairness in holding them liable on an implied warranty of quality. This unfairness has been recognized by some courts. Other courts have held, however, that an implied warranty of merchantabiilty arises from every sale, regardless of the seller's opportunity for inspection. In such jurisdictions wholesalers and retailers might find some protection in disclaimers.

There is, on the other hand, one serious stumbling block to the use of disclaimers by manufacturers and wholesalers of medicinal drugs. Where there is a claim of injury arising from the use of a medicinal drug, it will frequently turn out that the drug was administered by a physician or a hospital. In these circumstances the injured patient is not made aware of any disclaimer. The result is that a disclaimer would probably be no defense in such a case, since a disclaimer does not normally bind a purchaser without notice of its terms. Thus although disclaimers may afford some protection against liability in warranty, I cannot recommend them as an adequate substitute for liability insurance at the highest limits obtainable.

If product liability risks become both unavoidable and unlimited, a point could be reached at which the industry would find itself compelled to curtail the magnificent public service which it renders today. Wholesalers and retailers would be forced to shy away from distribution of newly developed products. Manufacturers would have to hold new discoveries off the market for long periods of controlled testing. Indeed, the very incentive to continue research in new fields of prevention and cure of disease would inevitably be reduced. These results would be a tragedy, not only for the drug industry, but also for the public. What is needed is some means of setting a

limitation to the risk of product liability.

I cannot hold out much hope for a limitation of liability in the courts. There is a very strong policy argument against letting risks of this kind fall upon individual injured plaintiffs. Moreover, we must bear in mind that judges and juries have to decide individual cases, and it is not surprising if they are unwilling to place the unavoidable costs of progress upon the injured. The basic problem is to arrive at some accommodation between two understandable but to some extent conflicting social policies. The first is the policy that favors spreading the risk of injury as widely as possible by placing it, in the first instance, on manufacturers and sellers. The other is the policy which favors a continuation of the discovery and rapid distribution of new drugs. This accommodation, I think, would have to be sought through legislation.

Therefore, I suggest that consideration might be given to a statutory limitation of the warranty liability of drug sellers. The statutory ceiling on recoveries in tort actions for wrongful death, which have been enacted in fifteen states, and which vary from $7,500 to $25,000, provide precedent for such a measure. An effort might be made to extend this concept of limited liability to apply to warranty, as well as tort actions, and to include personal injuries not resulting in death. However, any limitation in the form of a maximum recovery for each plaintiff is subject to two disadvantages. It would be unfair to plaintiffs with serious compensable injuries. It would also fail to provide a system whereby the drug industry would be in a position to calculate its risks, since the number of persons who might be injured in a given incident would be impossible to predict.

What I have in mind is something analogous to the limitation of liability which we find in the law of admiralty. The limitation of liability in admiralty means that, in the absence of negligence on his part, the owner of a vessel can calculate in advance the maximum risk of any single voyage. An owner's maximum losses and liability arising from a single voyage are limited to his investment in the particular ship plus $60 per ton.

A limitation of the liability of sellers of drugs might be worked out on similar principles. The limitation figure could be related to the specific product involved, as for example by limiting liability for non-negligent injury to a stated percentage of the seller's net sales of that product for the year in which the injuries occurred. Alternatively, the limitation might be set at the figure beyond which insurance coverage is no longer obtainable or economically feasible. In either case the limitation would come into effect only rarely: only in cases of major disaster, analogous, let us say, to the sinking of a vessel at sea. The objective, under any formula, would be to afford a reasonable recovery to injured consumers, while at the same time making the seller's risks finite and calculable.

"HORSE HEAD" U.S.P. ZINC OXIDE
IMPROVES COSMETIC POWDERS
5 WAYS

1. BETTER APPEARANCE
High covering power
Warm whiteness
Fine texture

2. LONGER-LASTING
Superior adherence
High oil absorption
Perfume fixative

3. DEODORANT
Neutralizes perspiration acids

4. SKIN PROTECTION
Soothing
Mildly astringent

5. SUNBURN PROTECTION
Screens out sunburn rays

THE NEW JERSEY ZINC COMPANY
FOUNDED 1848
160 FRONT STREET, NEW YORK 38, N. Y.
BOSTON · CHICAGO
CLEVELAND · OAKLAND · LOS ANGELES

Italian

TALC

•

CHARLES MATHIEU, Inc.
77 RIVER STREET • HOBOKEN, N. J.
Telephone: OLdfield 9-4412
New York: BArclay 7-3618

POTDEVIN
Label Paster

Time savings of 30% and more with unskilled operators makes your POTDEVIN Label Paster quickly pay for itself. No adjustments required for varied shaped labels. Accurate control of adhesive minimizes waste and assures clean, neat labeling.

Available in 6", 8½", 12" and 18" widths.

POTDEVIN MACHINE CO.
257 North Street • Teterboro, N. J.

Designers and manufacturers of equipment for Bag Making, Printing, Coating, Laminating, Gluing and Labeling

The question naturally arises whether such statutory relief should be sought at the federal or at the state level. A statutory limitation of product liability might be drafted and submitted to the state legislatures in the form of a uniform act. A federal statute would, of course, be vastly preferable from the point of view of immediate uniformity. There may be a question as to the constitutionality of a federal statute along the lines I have suggested, but I think it at least arguable that such a statute would be constitutional on the very ground which suggests its necessity: as a measure designed to maintain an undiminished flow of new drug products in interstate commerce.

I myself have a strong personal preference for an honest limitation of liability over some of the suggestions which have been made for a federal insurance fund. Federal insurance would, after all, amount to a form of federal subsidy, and I believe that business, in its own interest, should avoid asking for subsidies wherever possible. Moreover, I do not think this problem needs to be solved in that way. A statutory limitation of liability would, by its very nature, become operative only where large numbers of injured plaintiffs were involved. It might, in rare instances, result in some proportionate diminution of the recoveries normally available to such a group, but it would never impose on any individual the whole burden of his loss. Under these circumstances, I believe that a limitation statute would carry out the public policy which favors a spreading of the risks inherent in a technological society. Surely such a system should not be considered too high a price for insuring the continuation of a strong, progressive drug industry.

I have suggested statutory limitation of product liability as a long range solution to a long range problem. I do not believe that such legislation could be successfully advanced this year or next. A lot of preliminary groundwork would need to be done to educate the public and its responsible officials on the enormous contributions which the industry makes to the national health and welfare. It would further be necessary to get across the idea that progress in pharmaceutical and biological research inevitably entails some risks, and that those risks cannot be imposed wholly on the drug industry without serious danger of impairing its ability to serve the public.

ASPRO-NICHOLAS PLANTS

(*Continued from page 299*)

parent. In America we do not, as a general rule, hesitate to purchase new and faster equipment, but we operate scores of multi-story buildings that are anywhere from 50 to 100 years old and are of every possible shape, size and character. As long as we can continue to meet production requirements by shoehorning new equipment into old buildings that

should be scrapped, we continue to do it as a matter of policy. Meanwhile, our competition abroad is building *new* plants—good ones. Since the end of war the Nicholas interests have built, as rapidly as they could get permits to use allocated materials, new plants in Australia, England, France, Ireland, Holland, Jakarta and Pakistan. A new plant is a-building in South Africa and plans are being made to rebuild in Belgium and other continental countries. Plans are being made to invade this country just as soon as the English and Australian dollar exchange restrictions are lifted, thus permitting the company to obtain dollars to support its projected entry into the American market.

The company's rebuilding program was initiated in 1946, when I was invited to go to Australia and inspect potential plant sites. After careful evaluation, a large site was selected in a suburb of Melbourne. The site was not satisfactory from a topographic standpoint, but this deficiency was far outweighed by other advantages, among which was the beginning of a housing development in the same area. The site was then in what was still farming country. Now the new plant sits on a plateau in the middle of a vast housing devlopment which provides at its doors probably the largest labor pool in Australia. But once the site was purchased and plans prepared for its development, the project came to a dead stop for several years because the company could not get allocations for building materials, a good part of which, particularly steel, had to be imported.

Before describing the new Nicholas plants in some detail let me review the design principles that are exemplified in these plants. These principles have been described in detail by the writer in this magazine over the past 25 years and have been utilized in 22 new plants of various sizes since the war ended.

Every pharmaceutical and cosmetic factory consists of the following elements, each of which must be capable of expansion independently and without interference with any other.

Warehousing is the first element and usually the largest. Warehousing consists of bulk material handling. It comprises receiving and shipping departments; storage of raw materials, including formula weighing room and detention areas; storage of packaging materials and supplies; and storage of finished stock, including shelf stock and order packing. Warehousing should always be consolidated and under centralized control. Although warehouse stocks are generally divided into raw, packaging and finished materials, these separate areas should not be divided by partitions—excepting possibly the shelf stock and packing area, and this should be provided with demountable partitions only. It is a fact that, for seasonal or economic reasons, space requirements for particular classes of stock ebb and flow. Thus, at one season of the year, storage requirements for packaging materials may be excessive. In such cases these

We are direct importers of the well known Gold Seal French Process Zinc Oxide. Of the highest quality obtainable, Gold Seal Zinc Oxide meets the most exacting requirements of the pharmaceutical and cosmetic fields.

Prices are considerably lower than similar zincs produced by American manufacturers.

Shipped from our Jersey City warehouse or directly from dock in lots of 5 tons or more.

Sample and complete information upon request.

*Also meets requirements of Codex Francais

CHAS. B. Chrystal CO., Inc.

53 PARK PL., NEW YORK 7, N.Y.

PLANT-WAREHOUSE: JERSEY CITY

materials may overflow into finished stock areas or raw material areas. The same thing applies to every other class of material.

It is ridiculous to assume that packaging materials, for example, can be stored directly behind the line or lines that will use it, because high-speed bottle lines require vast amounts of materials and hence space. Other lines requiring collapsed packaging materials such as folding cartons may require by comparison only a very limited amount of space for a very large amount of packaging materials. Packaging materials cannot be stored in straight lines with reference to the packaging lines; they have a lateral flow with reference to such lines. In short, a straight-line flow is a manifest impossibility. Therefore, warehousing should be laid out parallel with manufacturing and packaging departments, and when this is done warehousing space may gradually be absorbed as manufacturing and packaging departments expand.

The next element or division is manufacturing and packaging. This element is divided by physical categories such as powders, granules, tablets and related dry products; liquid products, emulsions and suspensions; semi-solids—creams, ointments and pastes. With suitable dust collecting equipment, all these operations could be conducted in an unpartitioned area. But some products may dictate special operating conditions, which may force the use of partitions. For instance, some products will require aseptic techniques and rigid sanitary conditions. Others will require merely special air temperatures or humidity conditions. Such areas must, of course, be isolated within partitions—preferably demountable.

Visualize therefore two parallel lines, one representing warehousing functions, the other manufacturing and packaging functions. The latter may be divided into two subordinate lines, still parallel with each other, and this third line will represent those specialized departments that must be isolated behind partitions because of special manufacturing or packaging conditions. Consequently, the flow from raw stores through operations and back into finished stock storage is in the form of a letter C. In practical operations there is no such thing as a straight-line flow. A straight line applies only—and that to a limited extent—to materials being processed and packaged.

The third element or section is employee services and factory services. This embraces employee locker rooms, toilets, first aid rooms, personnel management, kitchen and cafeteria, recreation areas, plant offices, mechanical services such as steam plant, air conditioning and dust collecting equipment, maintenance shops. Naturally this element should be placed parallel with the operating and packaging departments because these departments employ the bulk of the people and mechanical service equipment should be placed as close as possible to the departments it serves.

The next element comprises laboratories: research, development, pilot and control. In small and medium-sized plants construction economy will dictate making this element part of the main structure. Since research, however, has no immediate connection with operations it can, in the larger plants, be placed in a separate building on the site or on a separate site altogether. For economic and management reasons I prefer to keep research on the same site and even as part of the main building, provided the site is large enough to afford unhibited growth of the research area and plenty of space for external buildings, which inevitably are dictated for one reason or another by a large research program. Control laboratories should always be as close as possible to operating areas and, when the size of the research function dictates a separate building, provision should be made in the main building for housing the control laboratories. In this case they can be made part of the factory services wing, if ample space for expansion and storage of samples can be provided.

The next element is external manufacture, which requires a separate building or buildings. Many firms make drug extracts, vitamins or chemical products. Such products may be highly odoriferous, irritating, toxic, explosive or highly inflammable. Likewise, animal houses may be required as in the production of biological and veterinary products. Some products such as antibiotics require vast tank farms. Hence, on the site an isolation area must be provided to take care of a congeries of accessories which for one reason or another cannot be placed in the main building. In addition to those mentioned one must provide for employee parking, water tanks, solvent tanks, power plants, garages, sewage treating plants, transformer banks, firehouses. All these miscellaneous requirments are part of the site layout and not part of the main building. It is important, however, to isolate this area so that future expansion of the main building will never interfere with it, and vice versa. All too often I find that even big companies having presumably an intelligent engineering staff will locate transformer banks, power houses, water tanks, solvent tanks and other expensive installations directly in the expansion path of the main building! This is done usually, and shortsightedly, to save a few uneconomic dollars in piping and wiring.

The next element is the general and executive offices. Offices in the drug and cosmetic industries usually are located with the plant, either as part of the principal structure or as separate buildings on the site. Like other elements, offices also need expansion space, but not anything like the other plant elements. A business can be quadrupled without requiring a like expansion of office space. It all depends upon the product mix and the total number of products in the line. Mechanization of office procedures offers an opportunity to reduce and restrict the num-

ADVERTISEMENT—*This entire page is a paid advertisement* *Prepared by U. S. Industrial Chemicals Co.*

U.S.I. CHEMICAL NEWS

Mar. ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1959

World's Largest Industry-Owned Research Reactor Opens at Plainsboro, N. J.

U.S.I. One of Ten Participants

On January 19, Industrial Research Laboratories, Inc. (I.R.L.) — the world's largest nuclear reactor financed entirely by private funds and devoted solely to industrial research — made its formal bow at Plainsboro, N. J. U.S.I. and nine other companies are participating in the venture, using the reactor as a tool for basic and applied studies in many fields.

The fields of interest of the participants include alcohol, chemicals, special metals, plastics, tobacco, machine tools, explosives, packaging, glass, lead, electronics, oil and rubber. This wide range of interests will make I.R.L. a major contributor to the "Atoms for Peace" program.

The five-million-watt "swimming pool" type reactor is housed in an 87-foot-high, aluminum-sheathed "beehive" of reinforced concrete. It

MORE

Methionine Bibliography Now Available from U.S.I.

Readers of the November U.S.I. Chemical News have expressed tremendous interest in the lead story on methionine absorption through the skin. Hundreds of letters, telegrams and phone calls have been received asking for more complete information. To answer these many requests, we have prepared a selected bibliography of published articles on the oral and topical applications of methionine, which should prove very helpful to interested parties.

This bibliography is now available on request.

Have You a New Product To Tell the World About?

Make it routine to send your publicity releases on new products and developments to the Editor of U.S.I. Chemical News, often called the "Front Page of the Chemical Process Industries." The issue you are reading right now will be printed in over 250,000 copies of the leading publications serving the chemical and related fields. The Technical Developments column alone will probably produce over 600 inquiries, judging from the past average. You incur no charges or obligations by sending us your new product releases. The material will be judged and used solely on the basis of newsworthiness and space limitations. And of course we cannot guarantee that your item will definitely appear because of these considerations.

U.S.I. Reopens Second Chlorine-Caustic Unit At Huntsville, Alabama

Plant Ideally Located to Supply Growing Needs of Southern Textile and Pulp and Paper Industries

U.S.I. increased chlorine and caustic soda output at Huntsville, Alabama recently, when a second unit was put back into operation. U.S.I. has been producing at this location since 1952. The Huntsville plant site offers the benefits of economic freight rates to a large number of users, and is therefore an ideal location from which to supply the chlor-alkali requirements of Southern textile and pulp and paper operations.

Liquid chlorine is available to users in 30-ton and 55-ton tankcars. The future possibility of barge shipments is being studied. Commercial grade, 50% liquid caustic soda is available in 8,000- and 10,000-gallon insulated and lined tankcars as well as in barges.

Both chlorine and caustic soda — products of the electrolytic decomposition of brine — are among the top dozen industrial inorganic chemicals produced in the United States today, in terms of tonnage. In 1957, the most recent year for which U.S. Department of Commerce figures have been reported, 3.9 million short tons of chlorine were marketed, and 4.0 million short tons of caustic soda, on a 100% NaOH basis, were sold.

MORE

Colognes Estimated Sixth In Aerosol Sales in 1958

Early estimates indicate that aerosol cologne sales for 1958 stand at over 26 million units. This would be an increase of about 50% over the 1957 sales figure of 18 million units. U.S.I. reports that the rise in its sales of anhydrous alcohol from 1957 to 1958 for aerosol cologne applications supports this estimate. Industry spokesmen reveal that 1958 was the first year in which aerosols accounted for over half the cologne market, in terms of dollar volume.

In 1958, as in 1957, colognes will probably rank sixth in unit sales among aerosol products, when all figures have been tabulated. The 1958 sales volume ranking should look much as it did in 1957, with hair sprays, shaving lathers, room deodorants, insect sprays and coatings taking the first five places.

Cell room of chlorine-caustic soda unit, U.S.I. plant, Huntsville, Alabama.

Mar. ★ **U.S.I. CHEMICAL NEWS** ★ 1959

CONTINUED

Chlorine & Caustic

Chlorine End-Use Pattern by Industry

INDUSTRY	PERCENT OF TOTAL
Pulp and Paper	15.0
Chlorinated Solvents	13.0
Automotive Fluids	11.0
Plastics and Resins	11.0
Insecticides and Herbicides	7.5
Refrigerants and Propellants	5.0
Water and Sewage	3.5
All Others	34.0
TOTAL	100.0

Caustic Soda End-Use Pattern (Estimated)

END-USE	PERCENT OF TOTAL
Chemicals	26.9
Rayon and Film	17.8
Pulp and Paper	6.6
Export	5.8
Petroleum Refining	5.5
Lye and Cleansers	4.1
Textiles	3.5
Soap	2.1
All Others	27.7
TOTAL	100.0

Organic Derivative of Hypochlorous Acid Being Tested in Cancer Surgery

Surgeons are testing an organic derivative of hypochlorous acid — a form of monoxychlorosene — as a wash for cleaning cancer wounds after operating. Used in this manner, the material has been successful in halting the growth of cancer cell seedings in rats after cancers had been removed surgically. The chemical is not a cancer cure however.

The material is being employed widely in cancer operations on humans at the present time. Thus far the usual post-operative tests via supravital staining techniques reveal that all cancer cell seedings remaining in and around the wounds are destroyed by the wash.

The hypochlorous acid raw material for this compound is unstable and not available commercially. It must be prepared by the reaction of chlorine with water.

CONTINUED

Reactor

is producing its chain reaction under 37 feet of demineralized water which serves as moderator, coolant and shield. The unit provides a source of neutrons, gamma rays and radioactive isotopes for study.

A permanent staff of 30-40 scientists and technicians is operating the reactor. In addition, participating companies maintain permanent staffs in individual research laboratories.

U.S.I. Studying Processes, Products

U.S.I.'s participation in this new undertaking is one more step in its expanding research program. Basically, its investigation will cover nuclear radiation for initiating or modifying chemical reactions, for controlling production processes, and for developing and testing new products.

Technicians load core of new I.R.L. nuclear reactor with fuel elements preparatory to start of operation. Core is 37 feet below surface of water which acts as coolant, shield.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

Sodium and potassium borohydride information is presented in 34-page manual now available. Properties, reactions, handling are discussed. Thirteen tables cover technical data collected from other published works. **No. 1450**

The 1958 edition of "Annual Review of Biochemistry" can now be purchased. It is a 775-page volume, containing 22 sections by different authors, covering developments in all biochemical fields. **No. 1451**

Heat transfer coefficients in small sodium heat exchangers are discussed in a reprint now available. Empirical equations are developed for calculating the over-all heat transfer coefficients for tube and annulus exchangers. **No. 1452**

Molybdenum hexacarbonyl is now available commercially for use as a chemical intermediate, catalyst and vapor phase deposition raw material. Compound and derivatives are under study for dyes, toners, lube additives, etc. **No. 1453**

Rotating-cylinder viscometer, designed for measurement of liquids at very low shear stresses, is now on market. Claimed to be particularly useful for accurate studies of high-molecular-weight polymers. **No. 1454**

New aluminum soap has been developed to gel solvents without use of heat. Bulletin now offered on product tells how to form stable gels from non-polar solvents and mixes of polar and non-polar solvents. **No. 1455**

Automatic, lab-bench zone refiner just developed will give high-purity organic reagents from run-of-bottle chemicals. Said to purify any material with 50-300°C M.P. Greatest use seen for organics hard to refine by usual means. **No. 1456**

Butene-1 can now be obtained with liquid vol. analysis of 98.5% butene-1, 0.0% isobutylene and butadiene, 0.8% n-butane, 0.7% butene-2. Butene-2 now obtainable with 95.0% butene-2, 0.5% butene-1, 1.0% butadiene, 3.5% n-butane. **No. 1457**

Standard fuel elements in 4 types, for use in low-power research reactors, now on market. Availability of standard elements claimed to greatly reduce costs of custom design, special tooling and set-up, special engineering. **No. 1458**

Methyl borate is now available commercially in carload quantity. Material is a widely-miscible, non-aqueous solvent, azeotroping agent, Lewis-acid catalyst and intermediate. Also acts as a neutron absorber and detector. **No. 1459**

PRODUCTS OF U.S.I.

HEAVY CHEMICALS

Caustic Soda, Chlorine

Sodium, Metallic: cast solid in tank cars, steel drums, pails; bricks in barrels, pails.

Sodium Peroxide, Sodium Sulfite, Sodium Sulfate

Ammonia, Anhydrous: commercial & refrigeration. Tank cars or tank wagons.

Ammonium Nitrate, Nitric Acid, Nitrogen Fertilizer Solutions

Phosphatic Fertilizer Solution: wet process phosphoric acid.

Sulfuric Acid: all strengths, 60 Baume to 40% Oleum. Also Electrolytic grade to Federal specifications. Tank cars or tank wagons.

OTHER PRODUCTS

PETROTHENE® Polyethylene Resins

Pharmaceutical Products: DL-Methionine, N-Acetyl-DL-Methionine, Urethan USP, Riboflavin USP, Intermediates.

Alcohols: Ethyl (pure and all denatured formulas); Proprietary Denatured Alcohol Solvents SOLOX®, FILMEX®, ANSOL® M, ANSOL PR.

Organic Solvents and Intermediates: Normal Butyl Alcohol, Amyl Alcohol, Fusel Oil, Ethyl Acetate, Normal Butyl Acetate, Diethyl Carbonate, DIATOL®, Diethyl Oxalate, Ethyl Ether, Acetone, Acetoacetanilide, Acetoacet-Ortho-Chloranilide, Acetoacet-Ortho-Toluidide, Ethyl Acetoacetate, Ethyl Benzoylacetate, Ethyl Chloroformate, Ethylene, Ethyl Sodium Oxalacetate, Sodium Ethylate, ISOSEBACIC® Acid, Sebacic Acid, Urethan U.S.P. (Ethyl Carbamate), Riboflavin U.S.P., Pelargonic Acid, 2-Ethyl Heptanoic Acid.

Animal Feed Products: Antibiotic Feed Supplements, BHT Products (Antioxidant), Calcium Pantothenate, Choline Chloride, CURBAY B-G®, Special Liquid CURBAY, VACATONE®, Menadione (Vitamin K_3), DL-Methionine, MOREA® Premix, Niacin USP, Riboflavin Products, Special Mixes, U.S.I. Permadry, Vitamin B_{12} Feed Supplements, Vitamin D_3, Vitamin E Products, Vitamin E and BHT Products.

U.S.I. INDUSTRIAL CHEMICALS CO.
Division of National Distillers and Chemical Corporation
99 Park Avenue, New York 16, N. Y.

U.S.I. SALES OFFICES

Atlanta • Baltimore • Boston • Buffalo • Chicago • Cincinnati
Cleveland • Detroit • Kansas City, Mo. • Los Angeles • Louisville
Minneapolis • New Orleans • New York • Philadelphia • St. Louis
San Francisco

ber of office personnel required. For these reasons, where physical or economic limitations are imposed upon the site, I have no objection to placing the offices on a second story above the laboratory or plant services wings. The factory and warehouse structure should always be of single-story construction of suitable height. So also should the factory services and personnel area, and likewise the laboratory area.

These layout principles have been applied to all the Aspro Nicholas factories, even to the small branch plants that are only 20 or 25 thousand square feet in area.

(This is the first of two articles on the Aspro-Nicholas plants by Dr. Chilson.)

ANIONIC AGENTS

(Continued from page 301)

halation toxicology per se, however, is not a new field, and the adaptation of techniques to specific toiletry problems is in progress.[9]

Uniformity of Commercially Offered Surfactants

Variations in the proportions of molecular species present in toiletry formulations have proved to have noteworthy effects on important properties of the final product. Viscosity, emulsion stability, foam and clarity are among the important properties of toiletries that have been noted to vary complexly with the variations in inorganic electrolyte, free fat and surfactant chain length, and these variations in product composition may derive from variations in the composition of a commercial surfactant.

Thus, commercial lauryl alcohol prepared by hydrogenation of coconut oil may have the following composition, typically:[10]

C_{10}:—2%
C_{12}:—60-65%
C_{14}:—20-25%
C_{16}:—10-12%
C_{18}:—2%

The following analysis is typical for a commercial lauryl sulfate prepared from such a mixture of alcohols:[10]

	NA LAURYL SULFATE	T. E. A. LAURYL SULFATE
Active ingredient	30-31%	ca 45%
Free fatty alcohol	1.5-2.5%	1.5-2.5%
Mineral salt	1-1.5%	1-1.5%
Water	to 100%	to 100%

Physical chemists have studied the formation and stability of foams by a variety of techniques. The simple system water-sodium dodecyl sulfate—dodecanol bears an interesting relation to the commercial lauryl sulfates, and is one of the factors in foam stability, foam drainage—has been studied in this system of high purity components by a number of workers.[11, 12] The importance of the ratio of dodecanol to sodium dodecyl sulfate in the stability of foams is clearly demonstrated in this work, and evidence of intermolecular compounds consisting of 1 mole sodium dodecyl sulfate: 1 mole dodecanol and of 2 mole sodium dodecyl sulfate: 1 mole dodecanol has been obtained.

Myddleton[13] has also demonstrated that lauryl alcohol inhibits the foam depressant action of butanol on commercial lauryl sulfate. These interrelationships of the unsulfated to sulfated molecular species are thus observed, if usually less specifically identified, in compositions based on commercially available surfactants, and the toiletries formulator turns a very jaundiced eye towards naive attempts to "improve" surfactant mixtures by reducing or eliminating unsulfated, as he does, indeed, also to products which exhibit wide lot-to-lot variations in unsulfated content. The proportion of unsulfated in toiletries formulation has also proved important in the stability of emulsions and suspensions, and here again an unexpected variation in commercially available surfactants can have undesirable effects on the product.

The compatibility and interaction of other toiletry ingredients with electrolytes imposes another important restriction on the tolerable amounts and variations of electrolytes in commercial surfactants. An important case in point is that of the many gums whose effect on viscosity of the composition[14] or even whose dispersibility is materially altered by the concentration and the identity of inorganic electrolytes present.

Chain length of the surfactant molecules has been shown to have effects on the bubble size of foams, and the primary difference between the solubilities of members of a homologous series of surfactants is well known. Changes, then, in the proportion of surface active molecular species present in commercial surfactants are reflected in related changes in the properties of the finished toiletry in which the commercial surfactant is used.

Properties of Surfactants And Their Applications in Toiletries

Surfactants are—each to a greater or lesser degree in specific examples—wetting agents, foaming agents, emulsifiers, detergents, solubilizers and dispersing agents, and it is the combination of these surfactant properties that is the primary basis for the use of surfactants in toiletries.[15-21] While some generalizations can be made about the relative effectiveness of each class of detergents in respect to each of these properties,[15] the basis for these generalizations is some rather specific tests and experience in specific systems. One finds numberless exceptions to rules thus derived, but they are nevertheless valuable in first approximation preparatory to experimental design. Thus, fatty alcohol sulfates are generally found to be superior foamers, but not as effective detergents as

gane's

DEHYDROACETATE-SODIUM

AMINOPHYLLINE
BARBITAL
BENZOCAINE
PABA — Na and K
PENTOBARBITAL, USP XV
PHENOBARBITAL
SECOBARBITOL
THEOPHYLLINE

WITH EVERY POUND . . . MORE GANE'S in QUALITY
Manufacturer of Fine Medicinal Chemicals

GANE'S CHEMICAL WORKS, INC.
535 Fifth Avenue, New York 17, N. Y. • YUkon 6-5780

the sulfonated amides, nor as good in wetting as sulfonated esters of the dibasic acids. Good foam with moderate detergency is desirable in some toiletry applications, such as shampoos, and here the surfactant is often the primary ingredient around which the composition is built. In wetting applications, the surfactant is more likely to be an adjuvant ingredient present in minor amount and designed to improve the application properties or speed the penetration of the cosmetic containing it. Essential oils are frequently solubilized in systems in which they are otherwise incompatible by means of surfactants, as is lanolin.[22]

Other properties not generally considered surfactant properties specifically are often important in the experimental selection of a surfactant for a given application. Of course, the reaction to the environment of the medium, especially to *p*H, is of obvious importance. The condition or "feel" of hair or skin may be perceptibly influenced by the absorption of anionic surfactants, as Zussman[23] pointed out in noting the scroop effect of certain alkyl benzene sulfonates. Moreover, Flett[24] has noted the deodorant properties of certain sulfonated aromatics, suggesting this property should be of value in toiletry applications.

REFERENCES

1. Toilet Goods Association Bulletin **3052** (March 28, 1958) and Drug Trade News pp. 32, 43 (April 7, 1958).
2. Sagarin, E. Cosmetics, Science and Technology. Ed., E. Sagarin. Interscience Publishers, New York. pp. 44-80 (1957).
3. Drug Trade News (July 28, 1958) and Drug Topics (July 21, 1958).
4. Pacifico, C. and M. E. Ionescu. J. Am. Oil Chemists' Soc. **34:** 203-209 (1957).
5. Chemical Week pp. 99-100 (September 6, 1958).
6. Gotte, E. and J. J. Herzberg. Fette Seifen Anstrichim. **58:** 31-35 (1956); **59:** 747-750 (1957).
   Gotte, E. and W. Kling. *ibid.* **59:** 820-822 (1957).
7. Stupel, H. and E. Szakall. Die Wirkung von Waschmitteln auf die Haut. Dr. Alfred Huthig Verlag, Heidelberg (1957).
8. Draize, J. H., G. Woodard and H. O. Calvery. J. Pharm. Exptl. Therap. **82:** 377 (1944).
9. Horn, H. J. Proc. Sci. Sect. Toilet Goods Assn. **29:** 36-39 (June 1958).
10. Giers, S. and D. Boido. *ibid.* **21:** 14-18 (May 1954).
11. Epstein, M. B. J. Soc. Cosmetic Chemists **6:** 370-377 (1955).
12. Wilson, A. *ibid.* **6:** 392-398 (1955).
13. Myddleton, W. W. *ibid.* **4:** 150-156 (1953).
14. Osipow, L. and L. D. Berger. Proc. Sci. Sect. Toilet Goods Assn. **28:** 9-11 (December 1957).
15. Hollenberg, I. R. *ibid.* **6:** 14-17 (December 1946).
16. Hollenberg, I. R. *ibid.* **8:** 1-4 (December 1947).
17. Griffin, W. C. J. Soc. Cosmetic Chemists **1:** 311-326 (1949).
18. Speel, H. C. *ibid.* **1:** 346-354 (1949).
19. Schwartz, A. M. *ibid.* **1:** 327-335 (1945).
20. Snell, F. D. and I. Reich. *ibid.* **1:** 336-345 (1949).
21. Taylor, A. *ibid.* **4:** 201-216 (1953).
22. Conrad, L. I., K. Motiuk and H. F. Maso. Proc. Sci. Sect. Toilet Goods Assn. **29:** 14-18 (June 1958).
23. Zussman, H. W. J. Soc. Cosmetic Chemists **1:** 355-361 (1949).
24. Flett, L. *ibid.* **1:** 304-310 (1949).

STEROIDS

(*Continued from page 304*)

The substitution of a double bond for two hydrogens between C_1 and C_2 in the hydrocortisone molecule gives prednisolone; a substance more than five times as active in treating most diseases, which in addition lacks many of the undesirable side effects of cortisone and hydrocortisone. This has been the most significant breakthrough in the cortical hormone field since Kendall discovered cortisone, because it demonstrated that a product of the laboratory could, indeed,

be superior to a product of nature. At an earlier date Squibb had made fludrocortisone, or hydrocortisone with fluorine added at C_9 in place of hydrogen. This was some ten times as active as cortisone, the only trouble being that it couldn't be used because of the severe edema or water retention that occurred; for this reason it had only limited use topically. However, this contribution led research men to seek other modifications that would offset this unfortunate effect resulting from the introduction of 9 fluorine. The prednisone/ prednisolone (which we tradenamed Meticorten/Meticortelone) breakthrough, started research laboratories on a new search. We made many variations of prednisone, including fluorine at C_9. One company added a methyl group to prednisolone at C_6 and came up with a different compound which was just about as active as prednisolone. Another added a hydroxyl at 16 to 9 fluoro prednisolone. The resultant product had the effect of offsetting the salt retaining effects of the fluorine substituent, but lost the greatly enhanced activity which fluorine had given the hydrocortisone molecule.

While this was being done in other laboratories, Schering and Merck, each pursuing its own independent research, almost simultaneously found two new steroids. The molecule, with a methyl radical at C_{16}, is 30 times as active as hydrocortisone and six times as active as prednisolone; it has all the properties of these substances but does not cause sodium retention or potassium loss in therapeutic doses. This product is known as dexamethasone, and is being sold by Merck as Decadron and by Schering as Deronil.

The 16 methyl group in this product can be in either of two positions—alpha and beta. Dexamethasone is the alpha form. The beta compound is still in the experimental stage but may never be marketed. A number of other compounds have also been made involving variations of 16 methylated steroids.

We have taken a rapid look at steroid drugs in the past and the present. Where do we go from here? What does the future hold? Is the field "worked out" or can we expect new finds? We must admit that the relationship of the chemical structure of steroids to their physiological action is known only imperfectly. Most of our discoveries have occurred through tedious trial and error alteration of structure. On principles now established and known, it is possible, by shifting groups already used to other positions, to prepare thousands of new compounds. By using new and unusual substituents in different positions, the number of new compounds theoretically possible can run into the hundreds of thousands. As we acquire more basic knowledge, we should be able to fashion or tailor-make molecules designed for a specific action. Do the known properties of steroid drugs suggest further advances?

Sanitair
AUTOMATIC
Air Cleaner
THE E-Z AIR CLEANER
Semi-automatic. For air cleaning new containers of any size. Containers are inverted over the air valves, two at a time, up to 40 p.m. Positively removes all loose lint, dust particles, etc. Write for the "E-Z Bulletin"
THE CATCH WILL AMAZE YOU
U.S. ROTARY RINSER
For rinsing any size or shape bottles or jars. Cleans both insides and outsides of containers: water, steam or air. Neck-chipping is prevented. Write for "Rotary Rinser Bulletin".

MILLION DOLLAR *campaigns cannot risk the chain reaction made possible by one unclean container.*

Carton lint, dust, loose dirt, fine glass particles are collected in surprising amounts by the exclusive cleaning action of the Sanitair Automatic Air Cleaner. Leading vintners, distillers, producers of foods, pharmaceuticals, cosmetics and chemicals are adding Sanitair units in ever increasing numbers. The investment has proved profitable to them . . . it should be profitable to you. Investigate. *Write today for the "Sanitair Bulletin".*

U. S. BOTTLERS MACHINERY CO. 4013 N. ROCKWELL ST., CHICAGO 18, ILL.

BOSTON • NEW YORK • PHILADELPHIA • LOS ANGELES • SAN FRANCISCO • SEATTLE • DENVER • PORTLAND, ORE. • OGDEN • KANSAS CITY TUCSON • JACKSON, MISS. • ATLANTA • MONTREAL • TORONTO • VANCOUVER • WINNIPEG • SANTIAGO • SAO PAULO • HONOLULU

Specialists in Liquid Filling and Container Cleaning Equipment

Steroid hormones or hormone-like substances display generally a wide spectrum of activity. An androgen or male sex hormone, for example, has not only the expected effects on sex organs and secondary sex characteristics but possesses also a metabolic influence—a marked anabolic effect in which protein synthesis is stimulated. These compounds are useful for the treatment of debility and weakness.

Such drugs are excellent for treating a male with a deficiency of male hormone. However, if we wish to build up a wasted elderly man, we find it necessary in many cases to limit or even deny this treatment to avoid prostate stimulation. In the female, the use of this hormone is disturbing and unwelcomed because of masculinization, that is, the excessive growth of hair and the lowering of the voice. This may be offset in part by combining it with estrogen.

The estrogens, similarly, possess this combination of sex and anabolic actions. If the two activities, sex and anabolism, could be divorced so that we would have a drug with only one or the other activity, we would truly have useful and powerful drugs. Indications that this may be done exist.

As has been mentioned, the cortical steroids play a vital role in the regulation of body metabolism. In general, they possess three types of activity: (1) anti-inflammatory and anti-allergic, (2) action on body electrolytes and fluids, and (3) catabolic action or breaking down of body protein.

If we could separate the first, and desirable, property from the generally undesirable second and third, we would have more useful agents. This discovery of prednisone showed that the anti-inflammatory action of a corticoid could be increased fivefold without appreciable change in the other properties. Is it unreasonable to expect further advances?

Consider the influence of certain cortical hormones on sodium retention. If, instead of merely reducing sodium retention, we could stimulate sodium *excretion*, we should have a diuretic. Diuretics are substances that promote the excretion of water and salts by the kidney. Such drugs are of great interest in medicine, since they are effective in relieving edema or retention of excess water in the body tissues. This condition often occurs in association with congestive heart failure and hypertension. The oldest organic diuretic is digitalis, and its active principles are steroids. Perhaps we will develop better steroid diuretics based on an ever increasing knowledge of the actions of cortical steroids.

The control of infectious diseases in the past generation has caused a sharp decrease in the death rate; there has been no corresponding drop in the birth rate. As a result, we are now experiencing an almost explosive growth in world population. Unless we learn or are prepared to control population with, of course, the proper regard for ethical problems involved, we face the prospect of having more people on earth than the earth may be able to support. The world's population is about 2.5 billion people. In the year 2060, we can expect a world population of perhaps ten billion. Our drug industry has played an important role in reducing the death rate and has helped some couples to conceive, thereby increasing the birth rate. What is our responsibility in helping to develop products which can assist in maintaining a balance in nature by regulating population growth?

Such drugs may well be steroids related to the female sex hormones. In fact, synthetic steroid progestins are already available which operate by preventing the formation of the egg. Further research in this area may permit us eventually to achieve or suppress reproduction at will.

Due to our success in sharply reducing the diseases and killers of childhood, the average age of our population is steadily increasing. We have more older people around; we are thus becoming more conscious of the diseases and disabilities of old age. We have even coined a new name for that branch of medicine which deals with this study, geriatrics.

How can we retard the degenerative process associated with aging? When we develop steroids possessing the anabolic properties of the sex hormones without their sex action, we can expect to find their chief application in geriatrics.

The increase in our elderly population has made cardiovascular disease our number one killer. If sterols are involved in cardiovascular disease, as seems indicated, we can speculate that a suitable steroid may be developed which will prevent or counteract it.

Our number two killer is cancer. Do steroids play a role here? We have some evidence that they do so in certain types of cancer. Thus, the male sex hormone is useful in the treatment of inoperable mammary, ovarian and uterine cancers. A high dosage of estrogens will dramatically relieve the pain of prostate cancer and, in favorable cases, prolong life for several years. Adrenal hormones, particularly prednisone, have beneficial effects in lymphatic tumors and leukemia. Do not these uses suggest that other steroid molecules may be found which will be of still greater value?

Both the sex and some cortical hormones produce a feeling of well-being or buoyancy called euphoria. In addition, certain steroids such as progesterone and related compounds can cause sedation and even anesthesia. This seems to indicate that steroids can have an effect on the central nervous system or brain. Do we have here yet another facet of steroid activity which, if it could be isolated or separated from hormonal effects, would lead to a new group of central nervous system drugs such as tranquilizers and stimulants? If so, we could expect such compounds to be superior to existing ones, since in general as a group, sterols possess low toxicities and are readily tolerated in the body.

Consider the value of steroids in animal husban-

dry. Today we use cortical hormones for the treatment of ketosis and inflammatory diseases in cattle. Non-steroid estrogenic substances are used to fatten animals. With suitable tailor-made steroids, we can expect to produce animals that will mature earlier, that will have more muscle and less bone and that will possess a desirable fat-to-muscle ratio. We can even expect to increase animal fertility, to breed outside the normal breeding season, even to increase the number of multiple births.

I have discussed some future applications for the increased use of steroid drugs. These speculations are based on information that we already know and on inferences that can be drawn from this knowledge. No mention has been made of the possibility of a breakthrough in our fundamental knowledge, something so new and radical that it is beyond guessing or prediction. Will such an advance occur in this fascinating field of steroids? Why not?

THE P.M.A.

(*Continued from page 305*)

still further accentuate this manpower problem. It must be recognized that there are only three ways by which a pharmaceutical firm can staff a government subsidized project. The first is to divert its own scientists from projects on which they are already working. The second is to obtain additional personnel from other firms, which results in a wasteful pattern of raiding. The third—easiest but most destructive—is to obtain the needed people from academic life, thus depleting still further the supply of teachers and scientists engaged in basic research.

In view of the current trend towards government-industry "crash programs" in electronics, aircraft and other fields of research, it may seem surprising for the pharmaceutical industry to urge that funds for medical research go mainly to academic institutions. For the reasons stated above, however, this Board believes that in the allocation of Federal funds for medical research—which as the Bayne-Jones Report states is inherently inseparable from medical education and training—the following principles should be adopted.

(1) Since our further progress in medicine directly depends upon the supply of highly qualified scientists, the training of additional teachers and research personnel should have highest priority.

(2) Government funds should be principally allocated to basic research objectives, to expand our fundamental knowledge in all medical fields, rather than to applied research and development.

(3) Except in unusual circumstances, government funds should therefore be allocated to non-profit institutions, such as medical schools, hospitals, and research institutions, rather than to private industry.

METHYLANDROSTENEDIOL

A tissue building steroid, providing anabolic action of the androgens with minimum virilization.

Other Steroid Hormones

ESTROGENS
ESTRONE
ESTRADIOL
ETHINYL ESTRADIOL U.S.P.
PROGESTERONE U.S.P.
TESTOSTERONE U.S.P.
METHYL TESTOSTERONE U.S.P.
TESTOSTERONE PROPIONATE U.S.P.
CORTISONE ACETATE
HYDROCORTISONE ALCOHOL-ACETATE

VITAMERICAN CORPORATION
1 John Street, Haledon
Paterson 2, N. J.

A Dependable Source for Hormones and Fine Chemicals

PRIVATE FORMULA
Tablets and Capsules
BY THE THOUSANDS—
OR BY THE MILLIONS

Over 45 years' experience enables us to render you prompt, accurate, and dependable service in the manufacture of your tablets and hard shell capsules. Our central location expedites delivery to any point in the country. Furnished bulk or packaged.

Vitamin Tablets and Capsules—Tablets—Ointments—Powders

We Invite Your Inquiries

Standard Pharmacal Co.
OF CHICAGO
PRIVATE FORMULA MANUFACTURERS
M. F. Charley, President
847-853 W. JACKSON BLVD. CHICAGO 7, ILL.

A LEADER IN BIOCHEMICAL RESEARCH

PRODUCT DEVELOPMENT DIRECTOR √
RESEARCH DIRECTOR √
attn: **PURCHASING DIRECTOR √**

re: Items of interest for research and product development

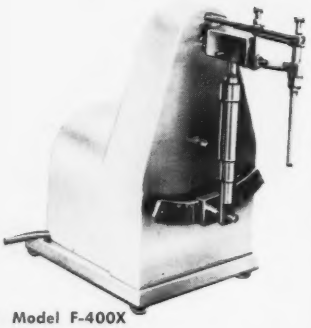
Are you looking for basic materials for new products in the fields of enzymes, hormones, emollients, antioxidants and fine chemicals? Would you like expert technical assistance in using these items in your product development and research?

We can supply these special materials and can work with you in the development of new products. For information, contact our technical representatives.

Call WElls 2-6771 in Kankakee, Illinois, or RAndolph 6-1923 in Chicago. Or write to:

Bio-Chemical Dept.
ARMOUR PHARMACEUTICAL COMPANY
Kankakee, Illinois

FILLS NEW STYLE PEN TYPE MASCARA APPLICATORS WITH COST SAVINGS DEPENDABILITY



Model F-400X

In many packaging departments where cosmetics are handled, the Model F-400X is doing an excellent job. A wide range of cosmetic products and containers from 1cc to 1 ounce are all filled with the Model F-400X. Aerosols, colognes, creams, emulsions, lotions, oils and spirits are all dispensed with ease and accuracy.

Est. 1922 **POPPER & SONS, INC.**
300 FOURTH AVENUE
NEW YORK 10, N. Y.

PerfeKtum

Write for New Bulletin #955F describing our entire line of PerfeKtum Liquid Filling Equipment, incluäing three new models.

Private industry should be subsidized only in cases where no non-profit organization can do the job. In such exceptional cases, however, full cooperation can be expected from a pharmaceutical firm approached by the Federal Government because of its unique qualifications.

PERFUME FORMULATION

(*Continued from page 307*)

spice effects in the chypre class.

	"ULTRAIONONE" E.033
2	"Cumin" ketone
4	Isobutyl quinoleine 5% in DEP
5	Labdanum oil distilled 10% in DEP
5	"Palatone" (Dow)
8	Vetyverol
8	Isopropyl quinoleine 5% in DEP
10	Hydratropyl alcohol
10	"Veronol" aldehyde 10% in DEP
20	Oil carrot seed 10% in DEP
34	Hydroxycitronellal
34	Eugenyl phenylacetate
30	Citronellyl oxyacetaldehyde
100	Alpha ionone
190	Methyl ionone standard (rhodia)
240	Dimethyl ionone
700	

This E.033 formula is an extreme composition based on three ionones with elaborate modifications. It is an all-purpose specialty base.

Violet

Because of the remarkable resemblance of the various chemicals of the ionone series to the violet flower, it would seem an easy matter to compound an artificial violet fragrance. Unfortunately this is not true. Although the ionones distinctly recall the violet fragrance, they are almost as difficult to manipulate effectively as the aliphatic aldehydes. Violet-type fragrances can readily be made, but a full rich fragrance that will simulate the violet flower without becoming tiresome is both difficult and costly to make.

The following are the "purpose" classifications of the violet components:

Basics. All the ionones and specialty compositions previously mentioned.

Blenders. Orris concrete, linalool, benzyl isoeugenol, eugenyl phenylacetate, hydroxycitronellal, "Cumin" ketone, isoeugenol, guaiac wood resin, guaiac wood acetate, heliotropine, benzyl acetate terpineol, diethyl hydroquinone, oil of bergamot, oil of lemon.

Adjuvants. Anisic aldehyde, hydratropyl propionate, phenylethyl acetate, allyl cyclohexane propionate, phenylethyl alcohol, tolyl alcohol; methyl heptine, methyl octine and phenylethyl heptine and octine

carbonates; methyl and ethyl myristinates, myristic aldehyde, aldehyde C-12 MNA, aldehyde C-12 lauric, eugenol, ylang Bourbon extra, ylang absolute, civet, indole, skatole, rhodinol, citronellol, dimethyl octanol, dimethyl octanyl acetate, oakmoss, "Veronol" aldehyde, citronellyl oxyacetaldehyde, geranyl oxyacetaldehyde, petitgrain natural and terpeneless, cuminic aldehyde.

Naturals. Cassie, mignonette, orange flower, rose and mimosa, jasmin absolutes.

Fixatives. Benzyl isoeugenol, eugenyl phenylacetate, benzyl salicylate, labdanum resin, costus resin, vanillin, coumarin, styrax resin, benzoin resin, vanillin Ethyl, musk xylol, musk ketone, oil sandalwood, santalyl acetate, vetyvert oil, vetyvert acetate, phenylethyl cinnamate, phenylethyl salicylate.

The following formula illustrates the design of a fully rounded violet fragrance.

VIOLETTE DE PARME E.034

250	"Ultraionone" E.033
50	Alpha ionone
40	Oil bergamot natural
20	Anisic aldehyde
10	Diethyl hydroquinone
10	Methyl heptine carbonate 10% in DEP
10	Methyl octine carbonate 10% in DEP
50	Ylang absolute
5	"Cumin" ketone
15	Isoeugenol
5	Eugenol
10	Vetyvert acetate
10	Santalyl acetate
10	Orris concrete
30	Heliotropine
5	Rose otto natural
5	Cassie absolute natural
10	Musk ketone
5	"Veronol" aldehyde 10% in DEP
5	Geranyl oxyacetaldehyde
5	Jasmin absolute
50	"Golden Jasmin" E.004
3	Civette absolute
1	Costus oil 5% in DEP
10	Hydroxycitronellal
20	Oil cedarwood terpeneless
56	Benzyl isoeugenol
700	

Cassie and Mignonette

The components of the cassie and mignonette very closely follow the violet and they need not be repeated. The principal difference is that cassie requires ethyl and isobutyl salicylates, whereas mignonette requires ethyl decine carbonate and methyl heptine carbonate, to a greater extent than is usually required by violet. Both mignonette and cassie rely heavily on the basic methyl ionone.

CASSIE E.035

10	Cassie absolute natural
15	Mimosa absolute natural
2	Rose absolute natural
10	Methyl ionone standard (rhodia)
10	Oil bergamot natural
10	Anisic aldehyde
2	Absolute labdanum extra
3	Methyl salicylate

(Continued on page 387)

Always Specify

GRP

THE PREFERRED SHELLAC

Harmless Lac Glazes
for Enteric and Other
Pharmaceutical Protective Coatings
with Rapid Solvent Release

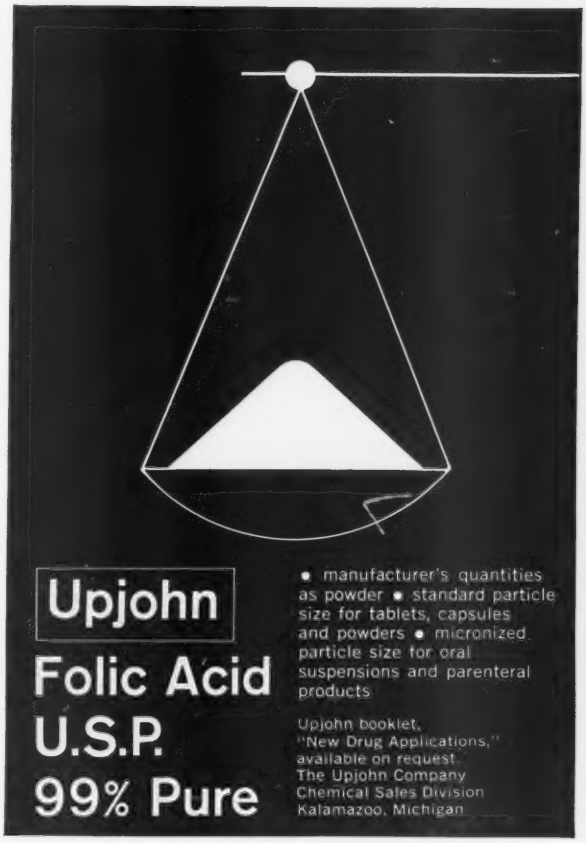
Production rigidly controlled
for highest quality and uniformity.
Guaranteed compliance with customers
specifications and latest U. S. Pure
Food, Drug and Cosmetics Act.

Arsenic, Rosin and Lead Free
Regular and Refined (Dewaxed) White Shellac packed in 50 lb. bags. Alcohol Solutions of both in required solids in *new, specially-lined, steel, non-returnable* 55 gal. drums or 5 gal. pails.

Products of an organization with over 130 years experience and a program of continuing research

Technical Bulletin V-158 available on request

GILLESPIE-ROGERS-PYATT CO., INC.
Office: 75 West St., New York 6, N. Y.
Plant and Laboratory: Jersey City, N. J.
Sales Representatives and Warehouse Stocks
in Principal Cities in United States & Canada.


Upjohn
Folic Acid
U.S.P.
99% Pure
• manufacturer's quantities as powder • standard particle size for tablets, capsules and powders • micronized particle size for oral suspensions and parenteral products
Upjohn booklet, "New Drug Applications," available on request.
The Upjohn Company
Chemical Sales Division
Kalamazoo, Michigan

By Far . . . the largest number of Perfume and Fragrance advertisers ever to use one magazine are now telling their story in BEAUTY FASHION. Read BEAUTY FASHION each issue for the fascinating story these perfume advertisements tell.

See in BEAUTY FASHION:

Angelique, Inc.
Anjou
Elizabeth Arden Sales Corp.
Balenciaga
Pierre Balmain
Blanchard, Inc.
Bourjois
Hattie Carnegie
Caron Corporation
Carven Parfums
Chanel, Inc.
Parfums Charbert, Inc.
Charles of the Ritz (Directoire)
Mary Chess
Cigogne Sortilege
Ciro, Inc.
Colonia, Inc.
Corday, Inc.
Coty, Inc.
Countess Maritza
Jean d'Albret
Dana, Inc.
Christian Dior
Parfums d'Italia
D'Orsay Sales Corp.
DuBarry
Parfums Evyan Co.
Fabergé, Inc.
Guerlain, Inc.
Ann Haviland
Houbigant, Inc.
Lancome Sales, Inc.
Lanvin
Lucien Lelong
Lentheric, Inc.
Lubin
Parfums Marcy, Inc.
Maromay, Inc.
Prince Matchabelli
Miahati, Inc.
F. Millot, Inc.
Germaine Monteil
Myrurgia
Jean Naté, Inc.
Jean Patou, Inc.
Robert Piguet
Renoir
Nina Ricci
Rigaud
Marcel Rochas
Roger & Gallet, Inc.
Nettie Rosenstein
Parfums Schiaparelli, Inc.
Simonetta
Shulton, Inc.
Tilford Toiletries
Tuvaché, Inc.
Parfums Weil Paris, Inc.
Les Parfums Worth

BEAUTY FASHION THE MAGAZINE OF PERSONAL SELLING

101 West 31st Street, New York 1, N.Y.

(*Continued from page 385*)

10	Orris concrete
10	Linalool
3	Oil petitgrain terpeneless
10	Coumarin
1	Ethyl decine carbonate 100%
8	Isobutyl salicylate
10	Geraniol extra
4	Hydroxycitronellal
1	Alpha ionone
5	Dimethyl ionone
3	Oil cumin seed 10% in DEP
6	"Aurantiol"
6	"Acaciol"
8	Benzyl isoeugenol
3	"Cumin" ketone
150	

"Aurantiol" is the Schiff's base between hydroxycitronellal and methyl anthranilate. "Acaciol" is the Schiff's base between anisic aldehyde and methyl anthranilate.

MIGNONETTE E.036

110	Methyl ionone standard (rhodia)
40	"Resedalia" (Diphenylethyl acetal)
10	Benzyl acetate
50	Oil bergamot natural
30	Phenylpropyl alcohol
50	Oil standalwood East Indian
20	Oil petitgrain South American
10	Ylang Bourbon extra
12	Oil sweet basil
8	Isobutyl salicylate
1	Galbanum absolute
1	Labdanum resin
1	Lavender absolute
2	Methyl octine carbonate 100%
50	Amyl cinnamic aldehyde
30	Phenylpropyl acetate
20	Cinnamic alcohol
20	Heliotropine
50	Hydroxycitronellal
5	Ethyl decine carbonate 100%
30	Benzyl isoeugenol
550	

NATURE'S ANTIBIOTICS

(*Continued from page 309*)

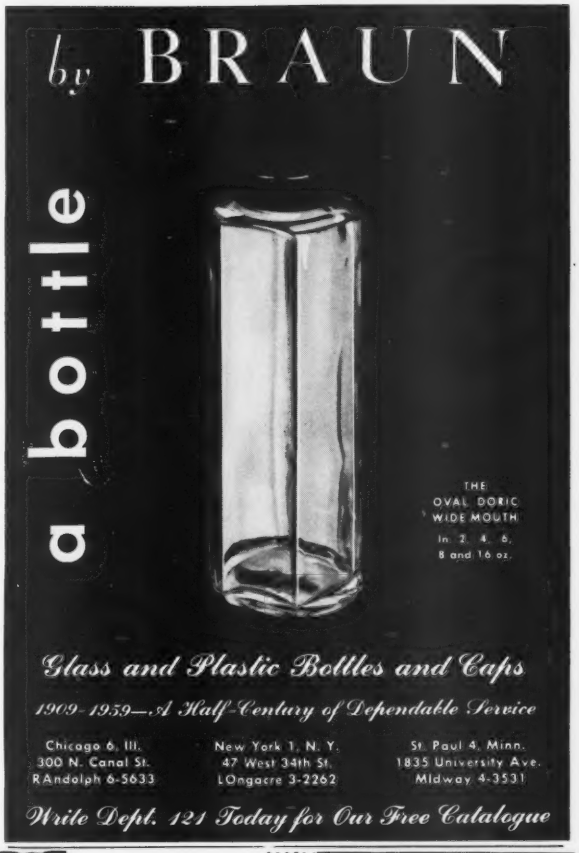
creted by such organs as the stomach, pancreas and intestines.

The control of unfavorable biochemical processes is best accomplished by seeding the intestines with a dominating flora of microbial antagonists. The same applies to the flora of enteropathogens where unfavorable growth and environmental factors act to inhibit reproduction, and with coincident decreased pathogenicity and virulence.

The Intestinal Pathogens

Fecal contamination of food and water is responsible for most gastro-intestinal diseases of microbial origin.

(1) Gastro-enteritis is caused by a group of organisms known as the pathogenic enterobacteriaceae. They include the *Salmonella typhi*, *S. paratyphi* A, B and C, *S. schottmuelleri*, and the *S. cholerae-suis* and *S. typhimurium*, which are pathogenic for both man


by BRAUN
a bottle
THE OVAL DORIC WIDE MOUTH
in 2, 4, 6, 8 and 16 oz.
Glass and Plastic Bottles and Caps
1909-1959—A Half-Century of Dependable Service
Chicago 6, Ill.
300 N. Canal St.
RAndolph 6-5633
New York 1, N. Y.
47 West 34th St.
LOngacre 3-2262
St. Paul 4, Minn.
1835 University Ave.
Midway 4-3531
Write Dept. 121 Today for Our Free Catalogue

F. RITTER & CO.
ESSENTIAL AROMATICS
look for the symbol of the RETORT
YOUR GUARANTEE
OF MATCHLESS QUALITY,
PURITY, UNIFORMITY
RITTER & CO
Behind the symbol of the Retort stands three generations of family pride and "know-how" in Essential Aromatics, natural and synthetic flavors, perfumer's specialties. Made in the West's most modern plant. The Retort is your guide to dependability.
F. Ritter & Co.
Los Angeles 39, California
Branch Offices in Principal Cities

DURABLE!

Resist heat, wear and corrosion

"Metalsmiths" Stainless Steel and Monel Utensils

METALSMITHS Utensils are built to the exacting needs of corrosion-resistant service in the process industries. Efficiently designed — made of correct metal analysis and weight — fabricated by latest techniques—backed by over 30 years' specialization in corrosion-resistant equipment.

Prompt Shipment — Anywhere!

WRITE FOR LATEST CATALOG — PRICE LIST

METALSMITHS

568 White St., Orange, N. J.

Specialists in Corrosion-Resisting Equipment

Atomizers! for Cologne Promotions

WRITE FOR PROMPT QUOTATION

. . . . Rehn ATOMIZER TOPS. . . .

Here's the way to pack sales power in your next cologne promotion. Take your choice of a Rehn custom creation or immediate delivery on Styles 1070 and 1082 in all cap sizes. They're ideal for tester tops, too. Next time, remember the Rehn Company, purveyors to your industry for more than a quarter-century.

THE REHN COMPANY

4020 FITCH ROAD
TOLEDO 13, OHIO

and animals.

(2) Bacterial dysenteries are caused by members of the genus *Shigella*, notably *Shigella dysenteriae*, *S. paradysenteriae* and *S. sonnie*.

(3) Food poisoning has its etiological factor in virulent strains of *Staphylococcus aureus*, resistant strains of which have recently defied the action of many antibiotics. This organism, invading foods such as hams, custards and cream fillings, secretes an exotoxin known as Staphylococcus enterotoxin, which is responsible for the acute diarrheal symptoms.

(4) Botulism is caused by *Clostridium botulinum*, a spore-bearing anaerobe. When ingested in contaminated food it causes a deadly enterotoxemia unless immunized with the specific antitoxin.

(5) Asiatic cholera is an acute endemic tropical hemorrhagic gastro-intestinal catarrh caused by *Pseudomonas* and *Vibrio comma*. Both are transmitted by fecal contamination of food and water. This disease is controlled by prophylactic immunization.

Lactobacilli Inhibit Enteropathogens

Lactobacillus acidophilus and *L. bulgaricus in vitro* inhibit the growth of most of the above pathogens, aside from cholera and botulism, when grown together in suitable culture media. The enteric pathogens appear to be sensitive to the action of lactic acid in concentration. Plates seeded with milk cultures of *L. acidophilus* or *L. bulgaricus*, or both, in dilutions of 1:20, 1:50, 1:100, slow or stop enteric pathogen growth and viability when incubated at around 37° C.

Bacteriological Aspects

L. acidophilus and *bulgaricus* grow poorly on surface media requiring a low surface tension oxygen potential. Their normal habitat is in fermenting manure, plant compost and ensilage. Growth cultures may be improved by enrichment with whey, glucose or yeast extract. These two lactobacters are acidophilic, nonproteolytic, aerobic and facultative anaerobes that can grow under strict anaerobic conditions. They can survive acidic conditions, *p*H 5.4 to 6.8, which are fatal to other organisms.

Biochemically, in homogeneous and heterogeneous fermentations they produce alcohol, lactic and formic acid, as well as other volatile acids, from carbohydrate media such as glucose, maltose, lactose and sucrose. The colonies are characteristically colorless, transparent and grow to pin-head size. Optimum growth temperature is 40 to 44° C. In liquid media growth assumes a milky appearance. On staining, the lactobacters appear as slim, gram-positive rods occurring in chains, pairs or singly with pleomorphic forms noted in old cultures.

Distribution may be facilitated by culturing these organisms in glucose or whey-enriched milk media, or, for drugstore dispensing, as a dehydrated or lyo-

philized powder in air-tight capsules for oral administration.

In Vitro Methods and Techniques

(1) Viable cultures of *Salmonella, Shigella, Aerobacter* and mixed enteric stool flora were streaked on various differential media. Plates were incubated at 37° C. for 48 hours.

(2) Characteristic colonies were subcultured in glucose and nutrient broth for use in securing bacterial antagonism data.

(3) Whey-enriched milk cultures of both lactobacilli were grown on thioglycolate and tryptacase soy bean media and subcultured in glucose broth.

(4) Sterile sensitivity discs were impregnated with *L. acidophilus* and *L. bulgaricus* and dropped on the streak plates of the pathogenic and nonpathogenic enteric flora. After 48 hours of incubation at 37° C., the plates were read for possible inhibition zones or evidences of bacterial antagonism.

(5) Fluid cultures of the enterobacteriaceae were mixed with similar cultures of the lactobacters in dilutions of 1:10 to 1:20, with one cc. of the mixture plated on thioglycollate media. Colonies were subcultured on differential media and identified, and any dominance noted.

(6) Stool cultures were made from persons who had taken viable lactobacters daily for a period of two weeks and the cultures were subcultured into fermentation tubes of glucose broth.

(7) Anaerobic cultures were made from mixed stools and cultured in anaerobic Navy jars. Sensitivity discs impregnated with full-strength solutions of the lactobacters were placed on the surface of the media and, following the usual incubation, read for inhibitory or antagonism activity.

Presumptive Results

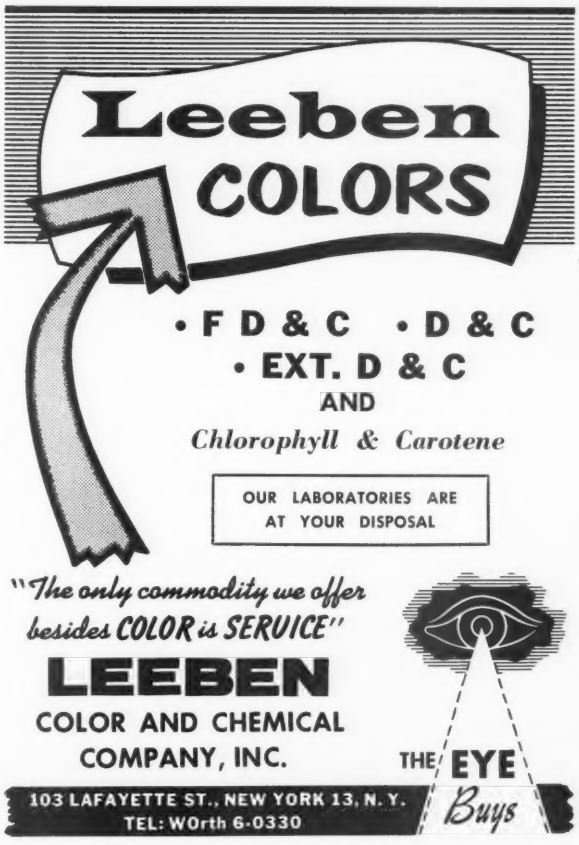
(1) Despite sluggish growth on most media, *L. acidophilus* and *bulgaricus* tended to inhibit the growth of enteric organisms normally present in the gastro-intestinal tract.

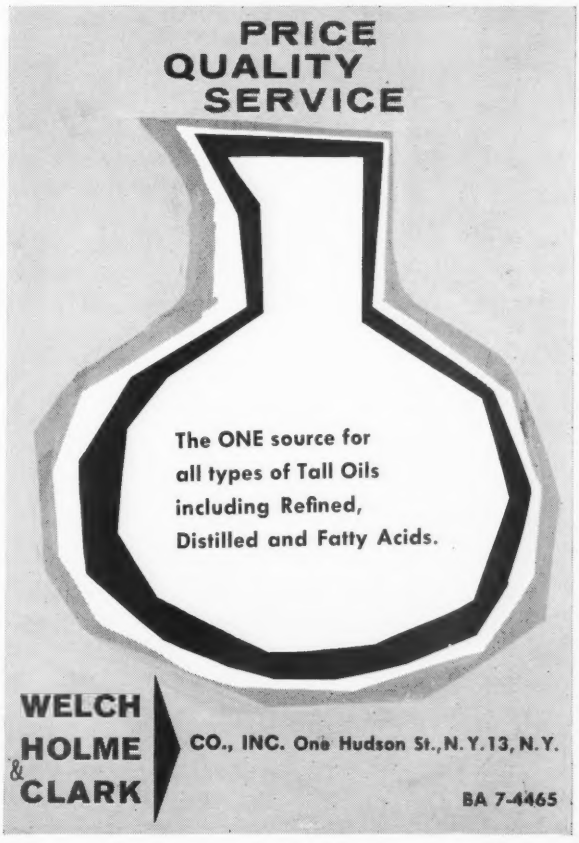
(2) *E. coli* on EMB media showed some colonies with a metallic sheen and appeared to be less inhibited than the other enterobacters. It is assumed that the *E. coli*, too, are homo fermenters of lactic acid and consequently tend to grow well with the lactobacters.

(3) *Shigella* and *Salmonella* on SS medium appeared to be inhibited by the scant growth of lactobacters.

(4) *Proteus* colonies, which cause unpleasant putrefactive odors due to the formation of H_2S and indole, were inhibited by milk cultures of the lactobacilli. Furthermore, there was a suprising absence of the foul odors ordinarily encountered on *Proteus* plates.

(5) *Aerobacter aerogenes*, which ferment sugars with acid and gas formation, grew well in the pres-


Leeben
COLORS
• F D & C • D & C
• EXT. D & C
AND
Chlorophyll & Carotene
OUR LABORATORIES ARE AT YOUR DISPOSAL
"The only commodity we offer besides COLOR is SERVICE"
LEEBEN
COLOR AND CHEMICAL COMPANY, INC.
THE EYE Buys
103 LAFAYETTE ST., NEW YORK 13, N. Y.
TEL: WOrth 6-0330


PRICE
QUALITY
SERVICE
The ONE source for all types of Tall Oils including Refined, Distilled and Fatty Acids.
WELCH HOLME & CLARK
CO., INC. One Hudson St., N.Y. 13, N.Y.
BA 7-4465

ence of the lactobacters. This symbiosis was of interest, since aerobacters are widely distributed in milk, sewage, water, grains and the intestinal tract. The clostridia, particularly *C. acetobutylicum*, were inhibited or dominated by the lactobacters when grown under anaerobic conditions. Again there was a noted absence of the usual putrefactive odors coincident with clostridial growth.

(7) Sensivity discs impregnated with *L. acidophilus* and *bulgaricus* on streaked enteric colony plates of both pathogenic and nonpathogenic bacteria showed some inhibition zones up to 0.7 cms. These inhibition zones were observed especially with mixed enteric flora on EMB and Endo's media, giving one the impression that these two lactobacters act as intestinal antibiotics, without inhibiting other useful intestinal flora.

(8) Bacterial antagonism was evident on other plates where semitranslucent lactobacilli colonies grew out from impregnated sensitivity discs up to 0.5 cm., the total exclusion of all other bacterial growth.

(9) *Staphylococcus aureus* did not grow well on plates of thioglycollate media when mixed with the lactobacters.

Presumptive Conclusions

Physical aspects: Because lactobacters cause lactic and formic acid fermentation in the intestines, the color of feces tends to change to light yellow to almost white, to assume a semisoft consistency and to become relatively odorless. A tendency to regularity and ease of defecation was noted.

Eructations of inflatus appeared less fragrant, violent and more prolonged, with CO_2 produced at the expense of the more unpleasant gasses.

Biochemical considerations: After prolonged imbibition of *L. acidophilus* and *bulgaricus*, alcohol, acetic and lactric acid fermentation prevented excess putrefactive anaerobic intestinal decompositions. Consequently, pungent butyric and propionic acids, H_2S, indole, skatole mercaptans and evil-smelling amines were greatly reduced, or eliminated entirely, by lactobacter fermentation. Mixed fermentations also occur in the intestinal tract, particularly when the lactobacters are present. Acetic acid fermentation by acetobacters and yeasts does not seem to be retarded by lactic-acid formers.

Microbiological Inferences

(1) The two lactobacters, *acidophilus* and *bulgaricus*, appear to act as nature's intestinal antibiotics which, while limiting the activity of intestinal pathogens and anaerobic putrefactive bacteria, appear to act symbiotically with the normal flora of enterobacteriaceae.

(2) Where possible antibiosis is not observed, bacterial antagonism may play an important role in controlling the intestinal flora, because undesirable flora are limited or inhibited by the acidic conditions produced by the lactobacters and acetobacters.

(3) Lactobacters evidently induce unfavorable environmental factors for the anaerobic proeolytic fermenters, with a sharp reduction in their foul-smelling by-products.

(4) The lactobacters have proved beneficial in the management of infant diarrheas, according to recent medical literature. It is noted that these organisms occur frequently in the normal stools of infants fed on formulas of pasteurized or raw milk.

(5) Antibiotics, such as penicillin and tetracyclines, when administered orally have a tendency to destroy the normal and necessary microbial intestinal flora, resulting in avitamitoses and nutritional disturbances. Remedial measures are an obvious necessity if oral antibiotic therapy is to continue. From our observations, implantation and replacement of killed intestinal flora with the lactobacters may be the logical answer to a very pressing medical problem.

(6) Staphylococcus enterotoxemia incidence may be reduced parenthetically where lactobacters dominate the intestinal flora, by a limitation of the growth of the exotoxin-producing *S. aureus*.

(7) Psychosomatic considerations not withstanding, lactobacillus therapy and prophylaxis is worth a trial in the management of gastric and duodenal ulcers. Statistical data indicates an absence of ulcers in European countries such as Bulgaria where *acidophilus* and *bulgaricus* are part of the daily diet.

Further Investigation Is Indicated

It is hoped that this preliminary research and investigation will open up new and wide avenues for more intensive and detailed studies of the role of implanted *L. acidophilus* and *bulgaricus* in the management of gastro-intestinal disorders, in the interests of public health and welfare.

BIBLIOGRAPHY

1. Topley and Wilson. Principles of Bacteriology and Immunity. Vol. 1, pp. 857-873 (1957).
2. Bryan, A. H. and C. A. Bacteriology, Principles and Practice. pp. 28-29; 131-132; 238-250. Barnes & Noble, New York (1957).
3. Bryan, A. H. On reviving acidophilis and bulgaricus therapy. Drug & Cosmetic Industry 83 (4): 440 (October 1958).
4. Rettger *et al*, Lactobacillus Acidophilis and Its Therapeutic Indications. Yale University Press, New Haven, Conn. (1935).
5. Tanner, F. W. The Microbiology of Foods. Garrard Press, Ill. pp. 250-294 (1944).
6. Olsen, E. Studies of the Intestinal Flora of Infants. Ejnar Munksgaard, Copenhagen, Denmark.
7. Briggs, M. and C. Dairy Science. 16: 251 (1954).
8. Dack, G. M. Food Poisoning. University of Chicago Press (1943).
9. King, J. D. British Medical Bulletin 12: 222 (1944).
10. Jacobs, M. B. The Chemistry and Technology of Food and Food Products Vol. 1 and 2. Interscience Company, New York (1944).

MECHANISM OF SMELL

(*Continued from page 310*)

duced. Some deodorant properties were also exhibited by the tissue removed from the anterior part of the nose but these were very much inferior to those shown by the pigmented tissue which had been taken from the olfactory cleft. These experiments showed

clearly that when odorous air was passed over the olfactory cleft it was deodorized and the odorant molecules were selectively picked out by the olfactory epithelium from the multitude of air molecules.

Likeness of odor

It is of interest that three methods of determining[1] likeness of odor have given reasonably concordant results. The methods were: (1) direct smelling, that is, organoleptic appraisal; (2) comparison of ease of adsorption on inorganic adsorbents; and (3) self-adaptation and cross-adaptation.

There can be no doubt that adaptation is much more severe with like smells than with unlike and the agreement that an adaptation method gives with an adsorption method of estimating likeness is indicative of adsorption playing a part in the natural process of smelling.

Adsorption and Odor Intensity

It has also been shown[5] that the apparent intensity of solutions of acetone, when smelled directly, increase as the concentrations increase, *up to a limiting value*. This limiting value varied from one odorant to another, for example with acetone it was at about 40 per cent and with isopropanol it was about 20 per cent. The finding was unexpected and the only explanation which seems to be adequate is that when a 40 per cent solution of acetone is smelled the concentration of acetone molecules in the inspired air is sufficient to form a monomolecular layer on those receptors which will adsorb acetone; consequently any increase in concentration beyond this point, although it gives a greater concentration of acetone molecules in the air, brings with it no increase in intensity of sensation because, when once the receptors are covered by absorbate, no further change in the direction of greater adsorption can take place.

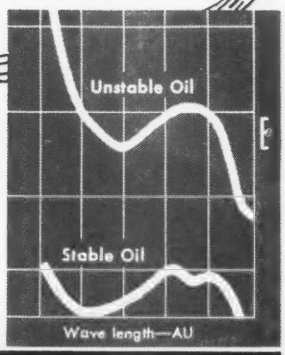
The Picture of the Smell Process

The picture that we are able to see from these considerations is that the air containing odorous molecules is inspired and passes over the olfactory epithelium before being drawn into the lungs. During ordinary breathing most of the air passes through the lower parts of the nasal passages and only a small portion eddies up into the top of the nose to stimulate the olfactory receptors. Nevertheless, sufficient air does, in fact, find its way to the sensitive area and as soon as the presence of an odorant material in the air is detected in this way it is instinctive to sniff. The action of the sniff is to close in part, by a process of lateral compression against the median septum, the lower passages and so direct more air to the olfactory receptors and, when this happens, the sensation of smell is more intensely experienced.

As the air which contains odorant molecules passes over the olfactory epithelium, the odorant mole-

from **Penn-Drake®**

Scientifically Predictable
LIGHT STABILITY
in White Oils



WRITE for Literature which includes detailed specifications.

penn drake products
PENNSYLVANIA REFINING COMPANY
BUTLER, PENNSYLVANIA
Branches: Cleveland, Ohio and Edgewater, N. J.

MAY WE SUGGEST THAT YOU
SPEND YOUR TIME IN SELLING!
LET US DO THE WORRYING

If you market any soft gelatin capsule products, or if you would like to add one to your list we have a message for you.

Your own quality control department will tell you our manufacturing methods are careful, efficient, precise—and the product one of highest quality. Your purchasing department will find our price fair. And we usually deliver on schedule.

If you are interested please call us at
PLaza 9-5880

Encapsulations Inc.
509 MADISON AVE., N. Y. 22, N. Y., PLaza 9-5880
GELATIN CAPSULE MANUFACTURERS

cules are selectively picked up by the receptors and adsorbed on them. But the process is dynamic and not static; the odorant molecules are held for only a small fraction, perhaps one-thousandth part of a second, and then fly off to be caught again by an adjacent receptor, to fly off again, be caught by another receptor and so on until they escape down with the air into the lungs. All the time that there is odorant material in the inspired air there are new odorant molecules to take the place of those which are flying off, so that, according to the concentration of odorant molecules in the air, a certain area of the olfactory receptors will at any given time be covered by adsorbed molecules.

Adsorption is always an exothermic process and each time that a molecule is caught by a receptor it passes energy to the receptor; each time that one flies off it takes with it energy from the receptor. This alternating process of adsorption and desorption therefore imparts to the receptors a rapid alternation of potential energy and it is this changing energy which stimulates the olfactory cells. If, however, the odorant air is later replaced by odorless air, then there are no longer odorant molecules to seize the vacated sites on the receptor system; still, because the process of adsorption is dynamic the odorant molecules are constantly leaving the receptors but when odorless air is inspired there are no longer odorant molecules to refill the receptor sites. These are soon bare and sensation vanishes.

Adsorption and the Properties of Smell

The above considerations afford an adequate explanation of some of the outstanding properties of smell.

Sensitivity. Air which contains only a few parts of ionone or of mercaptan in a million million parts of air is odorous; it is not easy to understand how, without some process of concentration, the nose can respond so delicately to such high dilutions. Adsorption is essentially a process of concentration. The odorant molecules, for example, of mercaptan, are withdrawn from the three-dimensional system in the air and are concentrated onto the surface, a two-dimensional system, of the olfactory epithelium. Without postulating some such process of concentration it would, indeed, be difficult to account for the sensitivity of the nose to such highly attenuated vapors, a sensitivity far greater than that of chemical tests.

Rapidity of response. Because the adsorbent surface of the receptive area picks up the odorant molecules as soon as they are present in the air passing over it, the sense of smell is stimulated immediately. The apparently instantaneous cessation of smell which accompanies the substitution of inodorous for odorous air is due to the lack of odorant molecules to lodge on the receptor sites which become available so quickly. It is because adsorption is a dynamic process that the sensation of smell ensues as soon as a flower is held to the nose and it is for the same reason that it disappears as soon as the flower is removed.

These three properties, the most outstanding of those of smell: its sensitivity, its apparently instantaneous response and its equally fast disappearance, are adequately explained when adsorption is considered to be the primary stimulus for olfaction. Other properties of smell, such as the approach of its intensity to a maximum, are also understandable and, indeed, there is no property of smell that has been observed which is not compatible with the view that adsorption is the primary olfactory stimulus.

References

1. R. W. Moncrieff. "The Chemical Sense" 2nd Edition, pp. 375-401. Leonard Hill, London (1951).
2. R. W. Moncrieff. The Characterization of Odours. *J. Physiol.* **125:** 453-465 (1954).
3. R. W. Moncrieff. The Sorptive Properties of the Olfactory Membrane. *J. Physiol.* 130: 543-558 (1955).
4. R. W. Moncrieff. Olfactory Adaptation and Odour Likeness. *J. Physiol.* **133:** 301-316 (1956).
5. R. W. Moncrieff. Olfactory Adaptation and Odor Intensity. *Amer. J. Psychol.* **70:** No. 1, 1-20 (1957).

PACKAGING

(Continued from page 317)

We used these words to stimulate the respondent's selection of cards. In addition we had men apply the preparation and make selections that suggested these feelings. Our results enabled the designer to proceed with greater clarity of direction than would have been possible without this test.

We found, for example, that *coolness* was associated with lighter hues, sheeny surfaces, distribution of space characterized by large empty white areas. Masculinity was associated with more intense, darker colors, solid rectangular lines and coarse textures.

After this test had been used to explore all the dimensions of the package, the findings were given to the designers. Backed by this data and an understanding of the general motivational picture, they proceeded to interpret the facts in their designs.

The new designs are still being created and, when they are completed, the packages will be subjected to further tests.

Although I have discussed primarily the symbolic message in the package as a form of communication, this is obviously only part of the problem. Developing a good package takes the combined effort of a team of technical experts, designers, psychological researchers and marketing experts working together.

I can foresee a time in the not too distant future when large organizations will have, as active participants on their packaging committees, trained research psychologists who will be important and valued members of their packaging team. •

(*Continued from page 331*)

digests in the preparation of their own.

Ideas Not Copyrightable

Another area where patents and copyrights differ is with respect to the scope of protection. An inventor by suitable claims can cover all means of reducing his inventive idea to practice. On the other hand, a copyright does not cover an idea but merely the *means* of expressing the idea. For this reason untold hundreds of stories and plays have been written on the so-called eternal triangle without copyright infringement. The basic idea may be the same, but each variation is a somewhat different way of expressing it and, hence, is permissible.

RECENT PATENTS

2,857,393-4—Ciba—Heterocyclics.
2,857,395—Herbert Arnold et al. (Germany)—Alpha-N-(Beta-Dialkylamino Alkyl)-Amino-Phenyl Acetic Acid Esters.
2,857,397—A. C. Cope—2, 5-Bis(Phthalimidomethyl)-Tetrahydrofuran.
2,857,398—Parke, Davis—Succinimides.
2,857,401—G. D. Searle—Acetylated Coumarins.
2,857,403—Olin Mathieson—16-Halo Testosterone.
2,857,404—Monsanto—Steroid Esters.
2,857,406—H. L. Herzog—Derivatives of Cortical Hormones.
2,857,408—Dr. Fulvio Bracco (Italy)—S-Acyl Pantetheines.
2,857,418—Ciba—Polyalkylene oxide Esters of N-Alkyl-4-Aminosalicylic Acid.
2,857,420 — Merck — β-Hydroxy-β-Methyl-γ-Formylbutyric Acids.
2,857,428—Olin Mathieson—2-Methyl-2-(Para-Carboxyphenyl)-Pentanone-4.
2,858,215—Barnett Labs. — Vitamin Oils in Particle Form.
2,858,251—Smith, Kline & French—Antihypertensive Medicinal Composition.
2,858,252—Ciba—Enteric Coating Compositions.
2,858,278—Miles Labs.—Sugar Tests Tablet.
2,858,307—Syntex—Sapogenins.
2,858,308—Olin Mathieson—Fluoro Spirostanes.
2,858,309—Ciba—Aminobenzene Sulfonamide.
2,858,311—Sterling Drug—Substituted Pyridazines.
2,858,312-3—Miles Labs.—Hypotensive Agents.
2,858,315—Ciba—Isoquinolines.
2,858,316—Union Chim. Belge—Piperidines.
2,858,320—Baxter Labs.—Stable Hematoporphyrin.
2,858,321—Ciba—Methylene-Hydrophenanthrenes.
2,859,212—Olin Mathieson—21-Aldo Steroids.
2,859,213, *2,859,224*—Monsanto—Esters for Synthesizing Steroids.
2,859,217—Eli Lilly—Acetylcholine Esterase Inhibitors.
2,859,222—G. D. Searle—4-Androsten-3-Ones.
2,859,223—Merck—Oxygenated Pregnadienes. •

American

Aromatics

Perfume Compositions
Essential Oils
Aromatic Chemicals

24 East 21st Street, New York 10, N.Y.
GR7-6313

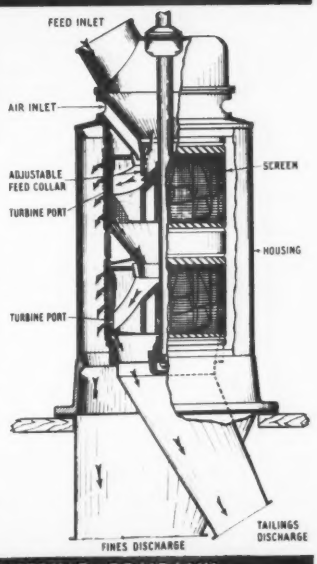
ENORMOUS SIFTING CAPACITY in MINIMUM FLOOR SPACE

abbé

TURBO SIFTER

produces clean, fast separation up to 10,000 lbs. per hr., in a floor space of only 6 sq. ft. Material, automatically fed at constant speed to the high speed turbine, is thrown through the vertical screens with tremendous centrifugal force. Operation is quiet, dust-free and non-contaminating. SECURITY SIFTING—Used by hundreds of cosmetic, food and chemical plants to remove foreign matter before final packaging.

Catalog 75 gives complete story on the Abbé Turbo Sifter.



abbe' ENGINEERING COMPANY
620G Graybar Bldg., New York 17, N. Y.
Designers and Manufacturers of
Ball, Pebble and Jar Mills • Pulverizers • Sifters • Cutters • Mixers

COMING EVENTS . . . . .

MARCH

18-20 **Pharmaceutical Manufacturers Assn.**, Biological Section, The Woodner, Washington, D.C.

23-25 **American Management Assn.**, special manufacturing conference, Roosevelt Hotel, N. Y. C. (A.M.A., 1515 Broadway, N. Y. C. 36)

26 **Packaging Institute**, regional conference on safety of packaging materials, Drake Hotel, Chicago, Ill. (P.I., 342 Madison Ave., N. Y. C. 17)

APRIL

1-3 **Pharmaceutical Manufacturers Assn.**, annual meeting, Boca Raton Club, Boca Raton, Florida (Dr. J. O'Neill Closs, 30 Rockefeller Plaza, N. Y. C. 20)

5-10 **American Chemical Society**, national meeting, Boston, Mass. (R. M. Warren, 115 Sixteenth St., N.W., Washington 6, D.C.)

6 **Packaging Institute**, regional conference on safety of packaging materials, Roger Young Auditorium, Los Angeles, Calif. (P.I., 342 Madison Ave., N. Y. C. 17)

5-14 **American Chemical Society**, national meeting, Cleveland, Ohio.

12-14 **Animal Health Institute**, annual meeting, Shoreham Hotel, Washington, D.C.

13-15 **American Management Assn.** packaging conference, Palmer House, Chicago, Ill. (A.M.A., 1515 Broadway, N. Y. C. 36)

13-17 **American Management Assn.** National Packaging Show, International Ampitheatre, Chicago, Ill. (See above.)

13-17 **American Society for Pharmacology and Experimental Therapeutics**, Atlantic City (Dr. Harold Hodge, University of Rochester, Rochester 20, N. Y.)

13-17 **Federation of American Societies of Experimental Biology**, annual meeting, Hotel Traymore, Atlantic City, N. J.

13-18 **American Society of Biological Chemists**, Atlantic City (Dr. F. W. Putnam, University of Florida Medical School, Gainesville, Fla.)

15-17 **Society of Cosmetic Chemists of Gt. Britain**, British Congress of Cosmetic Science, University College, London (Dr. R. H. Marriott, County Laboratories Ltd., Honeypot Lane, Stanmore, Middlesex, England—by March 1)

17 **Parenteral Drug Assn.**, Edgewater Beach Hotel, Chicago (A. D. Herrick, Executive Director, P.D.A., 39 Broadway, N. Y. C. 6)

20 **American Society of Perfumers**, annual symposium, Essex House, N. Y. C. (Edward Shuster, van Ameringen-Haebler, Inc., 521 West 57th St., N. Y. C. 19)

20-22 **American Oil Chemists' Society**, 50th anniversary meeting, Hotel Roosevelt, New Orleans, La.

28 **Association of Consulting Chemists & Chemical Engineers**, symposium and banquet, Shelburne Hotel, N. Y. C. (A. B. Bowers, Director of Publicity, A.C.C. & C.E., 50 E. 41st St., N. Y. C. 17)

29-30 **Manufacturing Chemists' Assn.**, packaging & transportation symposium, Engineering & Scientific Center, Cleveland, Ohio. (M. F. Crass, Jr., Secretary, M.C.A., 1625 Eye St., N.W., Washington 6, D.C.)

MAY

6-8 **American Institute of Chemists**, annual meeting, Traymore Hotel, Atlantic City, N. J.

7 **Society of Cosmetic Chemists**, spring meeting, Hotel Commodore, N. Y. C. (Robert A. Kramer, Evans Chemetics, Inc., 250 E. 43rd St., N. Y. C.)

10-13 **Proprietary Assn.**, Greenbrier Hotel, White Sulphur Springs, West Virginia (Dr. Howard A. Prentice, 810 18th St., N.W., Washington 6, D.C.)

10-13 **Flavoring Extract Manufacturers Assn.**, annual convention, Hotel Roosevelt, N. Y. C. (Robert Krone, Fritzsche Bros., Inc., 76 Ninth Avenue, N. Y. C.)

10-15 **Society of American Bacteriologists**, St. Louis, Mo. (E. M. Foster, Dept. of Bacteriology, University of Wisconsin, Madison 6, Wisc.)

12-14 **Toilet Goods Assn.**, annual convention and Scientific Section meeting, Waldorf-Astoria Hotel, N. Y. C. (Kathryn Fitzpatrick, T.G.A., Americas Bldg. Rockefeller Center, N. Y. C. 20)

17-19 **American College of Apothecaries**, annual convention, Hotel Roosevelt, New Orleans (A.C.P., Hamilton Court Hotel, 39th & Chestnut Streets, Philadelphia 4)

17-20 **Flavoring Extract Manufacturers Assn.**, annual convention, Traymore Hotel, Atlantic City, N. J.

18-20 **Chemical Specialties Manufacturers Assn.**, midyear meeting, Drake Hotel, Chicago (Herbert W. Hamilton, 50 E. 41st St., N. Y. C. 17)

18-21 **Glass Container Manufacturers Institute**, spring meeting, Greenbrier Hotel, White Sulphur Springs, West Virginia (H. W. Kuni, 99 Park Ave., N. Y. C. 16)

25-27 **Pharmaceutical Manufacturers Assn.**, Production and Engineering Section, The Cloister, Sea Island, Ga.

25-28 **American Society of Mechanical Engineers**, design engineering show and design engineering conference, Convention Hall, Philadelphia (Clapp & Poliak, Inc., 341 Madison Ave., N. Y. C. 17)

JUNE

1-4 **American Dermatological Assn.**, Claridge Hotel, Atlantic City (Dr. Wiley M. Sams, 25 Southeast Second Ave., Miami, Fla.)

8-12 **American Medical Assn.**, annual meeting, Atlantic City (Dr. George F. Lull, 535 N. Dearborn St., Chicago 10)

9-12 **Material Handling Institute**, exposition, Cleveland Auditorium, Cleveland, Ohio; Concurrently, **American Material Handling Society**, technical sessions (M.H.I., One Gateway Center, Pittsburgh 22, Pa.

11-13 **Manufacturing Chemists Assn.**, annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

12 **Parenteral Drug Assn.**, dinner meeting, Sylvania Hotel, Philadelphia, Penna.

15-19 **Gordon Research Conference** (Lipide Metabolism), Kimball Union Academy, Meriden, N. H.

JULY

13-17 **Gordon Research Conference** (Chemistry, Physiology and Structure of Bones and Teeth), Kimball Union Academy, Meriden, N. H.

20-24 **Gordon Research Conference** (Cell Structure and Metabolism), Kimball Union Academy, Meriden, N. H.

20-24 **Gordon Research Conference** (Microbiological Deterioration), New Hampton School, New Hampton, N. H.

AUGUST

3-7 **Gordon Research Conference** (Medicinal Chemistry), Colby Junior College, New London, N. H.

3-7 **Gordon Research Conference** (Steroids and Related Natural Products), New Hampton, N. H.

10-14 **Gordon Research Conference** (Toxicology and Safety Evaluation), Kimball Union Academy, Meriden, N. H.

11-13 **Western Packaging & Materials Handling Exposition,** Civic Auditorium, San Francisco

16-23 **American Pharmaceutical Assn.,** annual meeting, Netherlands-Hilton Hotel, Cincinnati, Ohio (Dr. Robert P. Fischelis, 2215 Constitution Ave., N.W., Washington 7, D.C.)

17-21 **Gordon Research Conference** (Food and Nutrition), Colby Junior College, New London, N. H.

SEPTEMBER

9-11 **Pharmaceutical Manufacturers Assn.,** International Section, Greenbrier Hotel, White Sulphur Springs, W. Va.

13-18 **American Chemical Society,** national meeting, Atlantic City, N. J. (Alden H. Emery, Executive Secretary, 115 Sixteenth St., N.W., Washington 6, D.C.)

17-20 **Drug, Chemical & Allied Trades Section, New York Board of Trade,** annual meeting, Sagamore Hotel, Bolton Landing, Lake George, N. Y. (Helen I. Booth, D.C.A.T., 291 Broadway, N. Y. C 7)

19-23 **Federal Wholesale Druggists' Assn.,** annual convention, Greenbrier Hotel, White Sulphur Springs, West Virginia (Ray C. Schlotterer, F.W.D.A., 2 Lexington Ave., N. Y. C. 10)

28-30 **American Oil Chemists' Society,** Hotel Statler, Los Angeles, Calif

OCTOBER

14-16 **Parenteral Drug Assn.,** annual convention, Statler Hotel, N. Y. C.

25-28 **Pharmaceutical Manufacturers Assn.,** Financial Section, Greenbrier Hotel, White Sulphur Springs, W. Va.

NOVEMBER

2-4 **Pharmaceutical Manufacturers Assn.,** Research and Development Section, Greenbrier Hotel, White Sulphur Springs, W. Va.

3 **1959 Exposition of Chemical Industry,** Coliseum, N. Y. C. (through December 4)

7-12 **Naional Wholesale Druggists' Assn.,** annual convention, Americana Hotel, Bal Harbour, Fla. (Harry A. Kimbriel, N.W.D.A., 60 East 42nd St., N. Y. C. 17)

9-12 **Glass Container Manufacturers Institute,** fall meeting, Arizona-Biltmore Hotel, Phoenix, Arizona (H. W. Kuni, 99 Park Ave., N. Y. C. 6)

12-14 **Gerontological Society,** Statler Hotel, Detroit (Administrative Secretary, Mrs. Marjorie Adler, 660 S. Kingshighway Blvd., St. Louis 10, Mo.)

16-18 **Packaging Institute,** annual national packaging forum, Hotel Statler, N. Y. C. (Charles A. Feld, P.I., 342 Madison Ave., N. Y. C. 17)

17-20 **Packaging Machinery Manufacturers Institute Show,** New York Coliseum, N. Y. C. (Albert R. Stevens, Elgin Mfg. Co., Inc., Elgin, Ill.)

DECEMBER

1 **Toilet Goods Assn.,** scientific section, winter meeting, Waldorf-Astoria Hotel, N. Y. C. (Kathryn Fitzpatrick, Americas Bldg., Rockefeller Center, N. Y. C. 20)

7-9 **Phamaceutical Manufacturers Assn.,** mid-year and eastern regional meeting, Waldorf-Astoria Hotel, N. Y. C. (J. O. Closs, 30 Rockefeller Plaza, N. Y. C. 20)

7-10 **American Medical Assn.,** clinical meeting, Dallas Auditorium, Dallas, Texas

8-10 **Chemical Specialties Manufacturers Assn.,** annual meeting, Mayflower Hotel, Washington, D.C.

GLYCO

EMULSIFIERS

SYNTHETIC WAXES

DIMETHYL HYDANTOIN
—AND DERIVATIVES

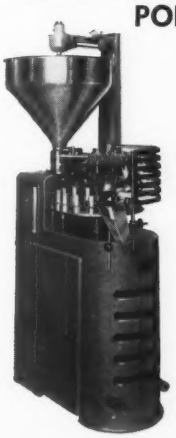
CHELATING AGENTS
—THE TETRINES®

GLYCO CHEMICALS
division of
CHAS. L. HUISKING & CO., Inc.
417 Fifth Ave., New York 16, N. Y., Phone: ORegon 9-8400. Cables: Glycopon, N. Y.
Plant: Williamsport, Pa. Chicago Office: 435 N. Michigan Ave.

KALIX-DUPUY

AUTOMATIC TUBE FILLING,
CLOSING & CRIMPING MACHINE

AVAILABLE with INTERCHANGEABLE HEADS for SEALING
POLYETHYLENE & METAL TUBES
Simplicity ★ Lower Price
Immediate Delivery!



★ 120 Gross Daily—One Operator.
★ 15 Minutes to Change Size. Very low Change cost.
★ Quickly Cleaned — No Hose — Fills Tubes, Jars or Cans.
★ Accurate Fill—No drip—No smearing—No air.
★ Handles all metal and Polyethylene tubes. Model RV-7 from ⅜" to 1½" diam. x 7½" high. RV-10 from 1" to 2½" diam. x 12" high.
★ Two-fold—Three-fold or Quadruple fold on RV-7. Two-fold or Three-fold on RV-10.
★ No tube—no fill. Coding jaws—Automatic Ejector.
★ Cap Tightener.
★ Stainless Steel Contact Parts.
★ Fully guaranteed — Replacement parts and service readily available.

WRITE FOR DESCRIPTIVE FOLDER AND PRICES

COMPLETE SERVICE and PARTS FROM STOCK

HARING EQUIPMENT Corp.
EXCLUSIVE KALIX-DUPUY DISTRIBUTOR
293 FRELINGHUYSEN AVE.
NEWARK 12, N. J. • TAlbot 4-0025

***ARLINCO RESEARCH LABORATORY, INC.**
Research, Formulation and Application to the Industry. Ethical Pharmaceuticals, Drugs, Cosmetics and Perfumery.
333 W. 52nd St., New York 19, N. Y.
PLaza 7-3861
*A-R-L Inco means: Applied Research Laboratory, Incorp.

LEBERCO LABORATORIES
Hormone Assays • Drug Assay
Pharmaceutical and Cosmetic Research
Sterility Tests • Toxicity Studies
Send for information concerning our services
125 HAWTHORNE ST., ROSELLE PARK, N. J.

RESEARCH LABORATORIES
EVERY FORM OF CHEMICAL SERVICE
Cosmetic Formulations—Toxicology—Engineering Analyses—Market Research
For information or consultation, call WAtkins 4-8800 or write to:
SNELL
FOSTER D. SNELL, INC.
29 West 15th St.,
New York 11, N. Y.

FOUNDED 1922
Food and Drug Research Laboratories
INCORPORATED
Maurice Avenue at 58th Street
Maspeth 78, New York City
CABLE: FOODLABS TEL. TWINING 4-0800

TRUESDAIL
LABORATORIES, INC
Chemists
Bacteriologists
Engineers
Request Publication CHEMISTRY IN ACTION on letterhead
4101 N. Figueroa
Los Angeles 65
California
CA 5-4148
San Francisco
Honolulu
PRODUCT & PROCESS DEVELOPMENT
TOXICOLOGY — STERILITY TESTS

For a review copy of Current Contents of Pharmaco-Medical Publications, a weekly survey of 400 primary scientific journals, write **Eugene Garfield Associates, 1523 Spring Garden, Phila.**

SMALL and LARGE . . .
ANIMAL STUDIES
SHORT OR LONG TERM
• TOXICITY TESTS . . . .
• PHARMACOLOGY . . . .
• HUMAN PATCH TESTS
Complete Service—CHEMISTRY, BACTERIOLOGY, F.D.A. COUNSEL, NEW PRODUCT DEVELOPMENT, PILOT PLANT FACILITIES. Price list on request.
Telephone JEfferson 1-5922
SCIENTIFIC ASSOCIATES
3755 FOREST PARK AVE.
ST. LOUIS 8, MISSOURI

WISCONSIN ALUMNI RESEARCH FOUNDATION
Projects, Consultation, and Production Control Services in Biochemistry, Chemistry, Bacteriology, Toxicology—Insecticide Testing and Screening.
WRITE FOR PRICE SCHEDULE
WISCONSIN ALUMNI RESEARCH FOUNDATION
P. O. Box 2217-J • MADISON 1, WISCONSIN

LaWALL & HARRISSON
LABORATORY SERVICES for the FOOD & DRUG INDUSTRIES
Drug Evaluation, Food Additive Studies, Chemical and Biological Assays, Clinical Studies, Research
Div. R, 1921 Walnut St., Philadelphia 3, Pa. • RI 6-4322

Help Wanted

TECHNICAL SALES—AEROSOLS: This is a salaried position with the country's largest private label aerosol manufacturer, having plants in New York and Chicago. Unusually interesting work in the Greater Metropolitan New York area. The man we want should have a good technical background, preferably chemical, and a successful sales record. We will train him in aerosol technology. Interviews can be arranged in New York. Submit a complete background resume to: G. Barr & Co., 3601 So. Racine Ave., Chicago 9, Ill.

RESEARCH CHEMIST: Excellent opportunity for man with Masters Degree in Chemistry and several years experience in pharmaceutical or cosmetic product formulation. A Ph.D. in Pharmaceutical Chemistry will be considered in lieu of the above experience. This vacancy is in the Research Department of our new plant located in Surburban South Jersey. For prompt consideration of your qualifications, send a detailed resume of your work experience and indicate your minimum salary requirements to: Personnel Manager, Whitehall Laboratories, Inc., 1000 S. Grand St., Hammonton, N. J.

PACKAGE DESIGN ENGINEER. Exciting opportunity for creative engineer with broad technological background in functional package and packaging machinery design. You will serve as consultant in all packaging areas of Eastern ethical pharmaceutical manufacturer. Salary open. Write full personal particulars in complete confidence to Box M-1, Drug & Cosmetic Industry. Interviews will be arranged in Chicago during National Packaging Show.

COSMETIC CHEMIST: Experienced, to supervise research and new product development. Excellent opportunity with prominent manufacturer. Welfare and pension benefits. Salary open for qualified man or woman. Box M-2, Drug & Cosmetic Industry.

USP ALUMINUM HYDROXIDE GELS MAGNESIUM TRISILICATE: Chemist or Chemical Engineer wanted with know-how to design and supervise erection and operation of plant. Submit resume of education, past experience and salary requirements. Box M-3, Drug & Cosmetic Industry.

SALES REPRESENTATIVE

We require additional representation in the greater Metropolitan New York area for sales of our perfume bases, isolates and aromatics to the toilet goods and chemical specialty industries.

The man we seek has a background in Chemistry, a discriminating and preferably educated sense of smell, sufficient industrial experience to talk shop with and intelligently serve the professional people he will be in contact with.

If you are interested in a career with a well-established and progressive company, we invite you to submit detailed resume including salary requirements to:

Dept. S. R.
POLAK'S FRUTAL WORKS, INC.
Middletown, New York

Business Opportunities

OWN YOUR OWN COSMETIC BUSINESS. A remarkable opportunity for a limited number of those experienced in cosmetics to have their own cosmetic business in association with a nationally famous personalized cosmetic retail orrganization, operating the largest chain of exclusive cosmetic shops in the U.S.A. If you have the store location—we furnish the cosmetics, a complete supervised merchandising, promotional and display sales aid plan. Your modest investment safeguarded. You may personally inspect many of our cosmetic shops that have operated successfully for many years under this unique franchise plan. Only those furnishing full details of background and financial ability will be considered. Write Box M-5, Drug & Cosmetic Industry.

Business Opportunities

LEADING NATIONAL SALES ORGANIZATION seeks established products for distribution. We will take over distribution and increase the national sales of your product. Have unlimited funds to carry accounts receivable, plus vast warehousing space. Large staff of top sales personnel covers entire United States. Rated AAA. All replies confidential. Write Box F-2, Drug & Cosmetic Industry.

REPRESENTATION WANTED: We have available for a limited number of qualified commission detail men, a complete line of parenteral medications. We desire high calibre representation by men who would like a high commission structure. Suitable for sale to physicians, hospitals, drug stores, surgical supplies, veterinarians, etc. No inventory or investment. In reply give territory desired, and some comments on background. Box M-4, Drug & Cosmetic Industry.

LABORATORIOS "ROLDAN," Box 1094, Ciudad Trujillo, Dominican Republic manufacturers of cosmetics, pharmaceuticals and private labels.

WHOLESALE COMPANY in the chemical-pharmaceutical industry in Germany is looking for a competent businessman with the corresponding capital who would take over the general representation and possibly also the manufacture in part of a slenderizing preparation for the United States of America. Interested parties should address the Pharmawerk Schmiden GmbH, Schmiden bei (near) Stuttgart, West Germany.

Machinery and Equipment For Sale

OVERHEAD CRANES AND HOISTS—SINCE 1919 — WE ARE RARELY UNDERSOLD. BACON CRANE & HOIST CORP., 3 BURCH AVE., AMITYVILLE, L. I., N. Y.

FOR SALE: Ertel ⌀EDB-10-10 st. st. filter. Fermenters, 750, 125 gal., T304 SS, ASME. Fitzpatrick Comminuting Machines, St. St., Models D, F, K. Tablet Presses: Stokes ⌀R, T, DDS-2, DD-2, RD-4. Colton ⌀561 st. st. Granulator. Colton Tablet Counter. Pfaudler glass-lined Kettles: 500, 150, 100, 30 gal. Perry Equipment Corp., 1429 N. 6th St., Phila. 22, Pa.

FOR SALE:—New Horiz. Spiral Mixers, Stainless & steel; Hope S.S. Piston Filler; B. P. 1 Gal. S.S. Double Arm Jack. Mixer; Day 20 Gal. Monel Sigma Blade, Jack. Mixer; Hobart 4 speed 80 qt. Mixer; Day D-10 Spiral Mixer; Day 2½ and 40 Gal. Pony Mixers; Raymond S.S. Lab. Mill; Mikro Bantam S.S. Pulverizer; Stokes 64B Drug Mill, S.S.; Eppenbach QV-6 and QV-8 Colloid Mills; Stokes "F", "R" & DD-2 Tablet Machines; Rotex Sifter 40" x 84"; S.S. Kettles 25-150 Gals.; Moyno & Worthington S.S. Pumps, etc. Write for Bulletin A-43 for latest listings. The Machinery & Equipment Corp., 293 Frelinghuysen Ave., Newark 12, N. J., TAlbot 4-2050.

MODERN REBUILT MACHINERY
UNION Rebuilt Machinery Established 1912
At Bargain Prices

- Pneumatic Scale high speed Automatic Cartoning Line with Feeder, Bottom Sealer, Top Sealer, Wax Liner and all interconnecting conveyors.
- Jones Model CMV highly flexible Automatic Cortoner.
- Ross 9" x 24" High Speed Three-Roll Roller Mill with S.S. water-cooled Rollers, SKF Roller Bearings, 7½ HP motor.
- Ross 5" x 14" High Speed Three-Roll Roller Mill with S.S. water-cooled Rollers, SKF Roller Bearings, 5 HP motor.
- Colton Model 140 Single Head S.S. Tube Filler.
- Stokes & Smith Model DD-2 Rotary Tablet Machine.
- MacKay-Davis Tablet Counter.
- Package Machinery Model C Transwrap with Scale Feed and Electric Eye.
- Mikro 1SH, 2TH, 4TH Pulverizers.
- Day 50 to 10,000 lb. Dry Powder Mixers.
- Standard Knapp, A-B-C, Ferguson and Ceco Carton Sealers
- Fitzpatrick "D" S.S. Comminuter.
- Labelers—Semi Automatic and Automatic. All Types.

Tell Us All Your Machinery Requirements. Complete Details and Quotations Promptly Submitted

UNION STANDARD EQUIPMENT CO.
318-322 Lafayette St. New York 12, N. Y. CAnal 6-5333
167 N. May St. Chicago 7, Ill. SEely 3-7848

MOULDS
for
LIPSTICKS
MASCARO
SUPPOSITORIES
STYPTIC PENCILS
and DIES for ROUGE
COMPACT POWDER
Write for Catalog
A. CAVALLA, INC. 163 West 18th Street, New York, 11, N.Y.

The C. E. Ising Corporation
Manufacturing Chemists
AROMATIC PRODUCTS
"I.G." ("ISING" Germicide)
SOAPS for KENNELS and INDUSTRIES
MASKING ODORS for INDUSTRIES
Founded 1908
133-24 41st AVE., FLUSHING, NEW YORK

Aromatic Chemicals
FOR PERFUMERY AND FLAVORS
Isopropyl Quinoline • Isobutyl Quinoline
Ethyl Anthranilate • Isobutyl Anthranilate
Diacetyl • Acetyl Propionyl • Acetoin
FAIRMOUNT
CHEMICAL CO., INC.
600 FERRY STREET NEWARK 5, N. J.

FOR YOUR PRIVATE FORMULA
NEW ZENITH PLANT—NEW HIGH-SPEED PRODUCTION LINE turning out quality pharmaceuticals at low cost. Specializing in:
TIMED DISINTEGRATION CAPSULES & TABLETS
COATED & UNCOATED TABLETS
HARD GELATIN CAPSULES
Imprinted with your name or insignia. Let us suggest a formula for your next new product.
CALL OR WRITE
ZENITH LABORATORIES, INC.
150 South Dean St., Englewood, New Jersey. LOwell 7-4880
DIgby 9-1560 (from N.Y.C. exchanges)

®CODEDGE
LABEL DATING AND CODING MACHINE
• Codes Labels — All Shapes, All Sizes
• Clean, Fast and Economical
• Saves You Time, Labor and Money
• Never a Service Problem
USED BY PROGRESSIVE COMPANIES IN OVER 50 COUNTRIES
Booth 565, 28th National Packaging Exposition
Chicago April 13-17, 1959
FOR DETAILS WRITE TO:
GRIFFIN-RUTGERS, INC.
Dept. D. C. 3, 41 E. 42 St., New York 17, N. Y.

falba
Reg. U.S. and Foreign Countries
"THE HEART OF LANOLINE"
THE OXYCHOLESTERIN ABSORPTION BASE
Suggested Formulae on Request
Pfaltz & Bauer, Inc.
EMPIRE STATE BUILDING, NEW YORK

Palladium Ammonium Chloride, Palladium Black
Diammine ... Palladium ... ide Diam
oxime, ... Monosu
Palladium ... Palladous
Aldehyde, Palmitoleic Acid, Palmitoyl Chloni
... Powder, ... Penthenol, Pant
... Stain, d
... Pec
Pectinolytic Enzymes, Pellidol, ... n,
Pentaacetyl-d-glucononitrile, ... -a-
Penta... onta
chlo... Pent
dec... eryt
to... irin,
OVER 20,000 CHEMICALS IN STOCK!
Write for Our New 138-Page Catalog!
DELTA
PIONEERS IN CHEMISTRY
DELTA CHEMICAL WORKS, Inc.
23 West 60th St. New York 23, N. Y. PLaza 7-6317

MOULDS
LIPSTICK - COLOGNE - DEODORANT
STYPTIC PENCILS - MASCARA
SUPPOSITORIES
PROGRESSIVE MACHINE WORKS
137 West 22nd St., New York 11, N. Y.
ROUGE COMPACT POWDER
PUNCHES FOR TABLETS
also
FOOT & POWER PRESSES FURNISHED
DIES

CAMILLI, ALBERT & LALOUE S.A.

Grasse, France Established 1830

Natural Perfumer's Materials Stocked by Our American Affiliate

ABSOLUTES

BASIL	JASMIN	MOUSSE D'ARBRE
BORONIA	JASMIN POMMADES	OAKMOSS
BROOM (Genet)	JASMIN CHASSIS	ORRIS
CASSIE ANCIENNE	JASMIN BENZOL	RESEDA
CIVET	JONQUILLE	ROSE DE MAI
CLARY SAGE	LABDANUM	ROSEMARY
EVERLASTING (Immortelle)	LAVENDER	THYM
GERANIUM	LIATRIX	TOBACCO
HAY	MATE	VIOLET LEAVES
HOPS	MELLILOT	YLANG YLANG A

Jasmin

CONCRETES — ESSENTIAL OILS — RESINOIDES

CAMILLI, ALBERT & LALOUE, INC.

15 East 48th Street New York 17, N. Y.
Phone PLaza 3-6070

ADVERTISING INDEX

Abbe Engineering Co. 393
Allied Chemical Corp., General Chemical Division 322B
American Aromatics, Inc. 393
American Cholesterol Products, Inc. 372, 374
American Cyanamid Co. 277
American Sterilizer Co. 348
Armour Pharmaceutical Co. 384
Atlas Powder Co. 294D

Baker Chemical Co., J. T. 284
Beauty Fashion 386
Braun Co., W. 387

Camilli, Albert & Laloue, Inc. 398
Carr-Lowrey Glass Co. 324
Cavalla, Inc., A. 397
Chrystal Co., Inc., Charles B. 377
Colonial Applicator Co. 329
Colton Co., Arthur 350
Columbia-Southern Chemical Corp. 278
Continental Can Co. 330A
Continental Oil Co. 367
Croda, Inc. 361
Crown Cork & Seal Co., Inc. 320

Delta Chemical Works 397
Distillation Products Industries 334
Dodge & Olcott, Inc. 271
Dow Corning Corp. 270B
Dragoco, Inc. 286B-C
Drug & Cosmetic Catalog—1958-59 Edition 332
Du Pont De Nemours & Co., Inc. "Freon" Products Div. 326
Durlin Co. 278B

Eastman Chemical Products, Inc. 364
Emery Industries, Inc. 267
Encapsulations, Inc. 391
Ertel Engineering Corp. 380

Fairmount Chemical Co., Inc. 397
Felton Chemical Co., Inc. 270A
Firmenich Incorporated 370B
Florasynth Labs., Inc. 282
Fritzsche Brothers, Inc. ..... 362A, B, C & D

Gane's Chemical Works 380
Gillespie-Rogers-Pyatt Co., Inc. 385
Givaudan-Delwanna, Inc. 294A-B, 336
Glycerine Producers Association 292
Glyco Chemicals 395
Griffin-Rutgers, Inc. 397
Groen Manufacturing Co. 352

Harchem Div., Wallace & Tiernan, Inc. 364
Haring Equipment Corp. 395
Heyden-Newport Chemical Corp. 272
Hoffmann-La Roche Aromatics Div. 338A-B
Hoffmann-La Roche, Inc. 263, 274-275, 286D, 342
Huisking & Co., Inc., Charles L. 395

Ising Corp., C. E. 397
Ivers Lee Co. 316

Kohnstamm & Co., H. 278A
Kolar Labs., Inc. 290

Lambert Engraving Co. 318
Lautier Fils 369
Leeben Color & Chemical Co., Inc. 389
Lueders & Co., George 358

Mallinckrodt Chemical Works 356, 357
Maryland Glass Corp. 314
Mathieu, Inc., Charles 376
Metalsmiths Div. of Orange Roller Bearing Co. 388

National Aniline Div., Allied Chemical Corp. 286A
New Jersey Zinc Co., The 375
Norda Essential Oil & Chemical Co. ..... Cover 2

Onyx Oil & Chemical Co. 283
Orbis Products Corp. 273
Owens-Illinois Glass Co. 322A

Pennsylvania Refining Co. 391
Pfaltz & Bauer, Inc. 397
Pfizer & Co., Inc., Chas. ..... Cover 4
Polak's Frutal Works 333
Popper & Sons, Inc. 384
Potdevin Machine Co. 376
Progressive Machine Works 397

Reheis Co., Inc. 279
Rehn Co., The 388
Richford Corp. 328
Ritter & Co., F. 387
Robinson Wagner Co., Inc. 341
Ross & Son Co., Inc., Charles 350
Roure-Dupont, Inc. 268-269

Scranton Aerosol Packaging 346
Sheffield Tube Corp., The 312-313
Sindar Corp. 370A
Staley Manufacturing Co., A. E. 373
Standard Pharmacal Co. 383
Sterwin Chemicals, Inc. 265
Stokes Corp., F. J. 354-355
Synfleur Scientific Labs., Inc. 285

Ungerer & Co. ..... Cover 3
Union Carbide Chemicals Co. 330B
Upjohn Co., The 385
U. S. Bottlers Machinery Co. 381
U. S. Industrial Chemicals Co., Div. of Nat'l Distillers & Chemical Corp. ..... 378A, B

van Ameringen-Haebler, Inc. 280-281
Vanderbilt Co., R. T. 294A
Van Dyk & Co., Inc. 288
Verley & Co., Albert 345
Verona Chemical Co. 276
Vitamerican Oil Corp. 383

Wallace & Tiernan, Inc. 364
Wallerstein Co. 286
Welch, Holme & Clark Co. 389
Western Condensing Co. 270
Will & Baumer Candle Co. 266

Zenith Labs., Inc. 397